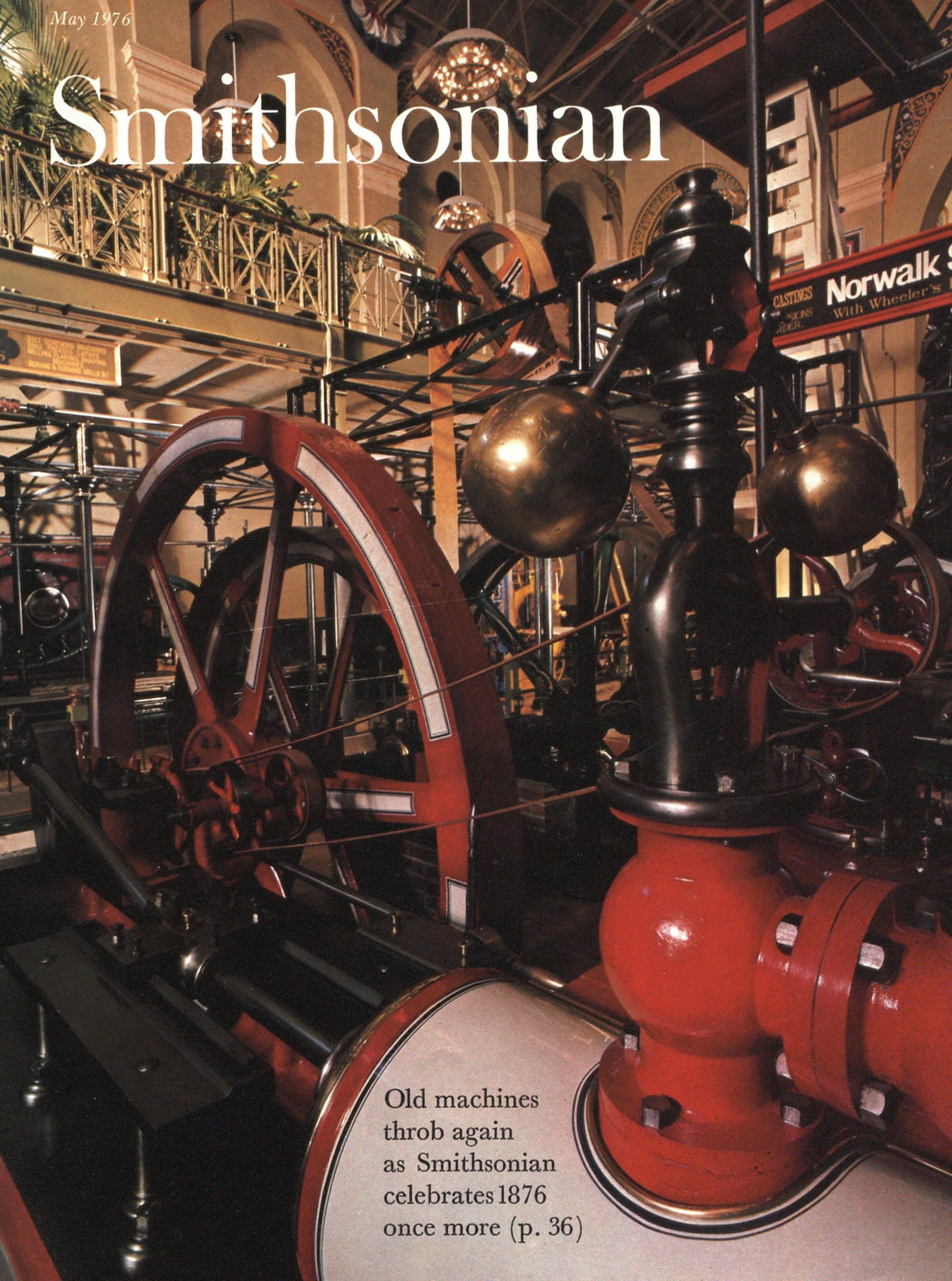
May 1976

Smithsonian



Old machines throb again as Smithsonian celebrates 1876 once more (p. 36)

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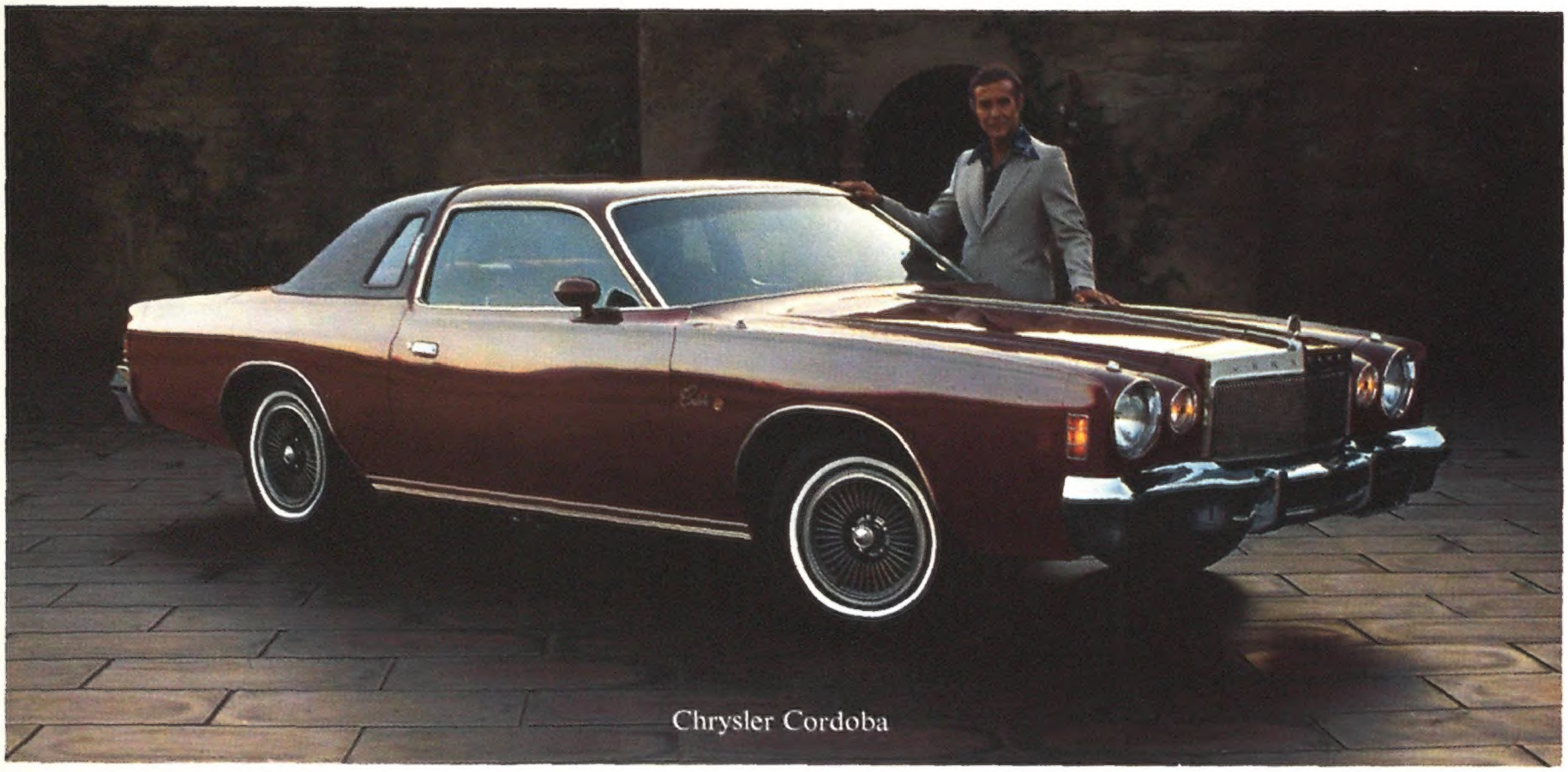

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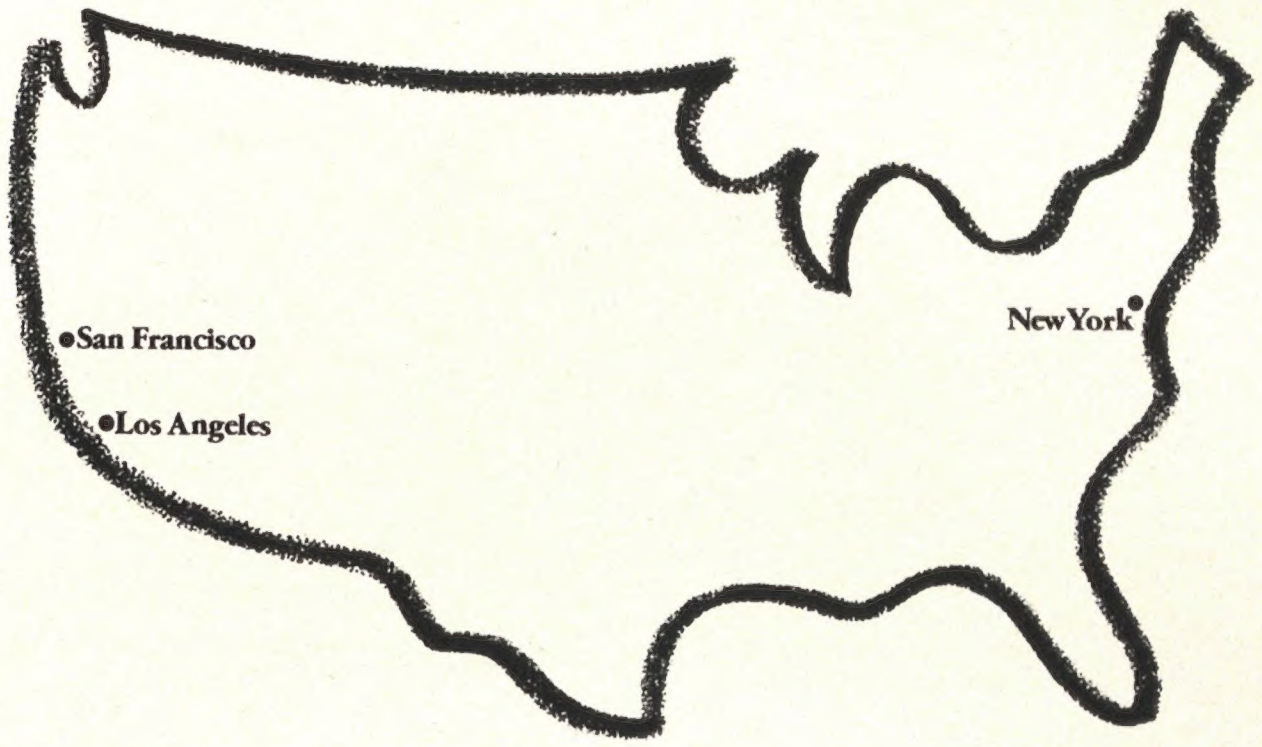

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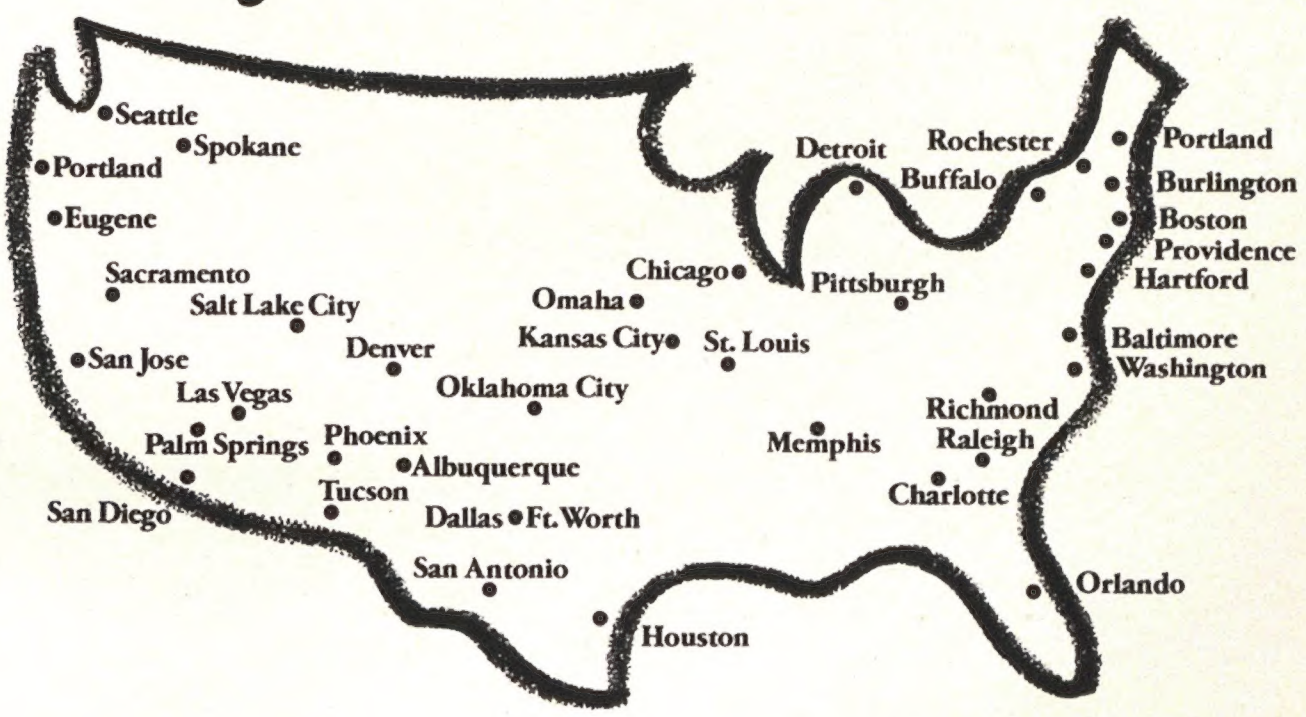

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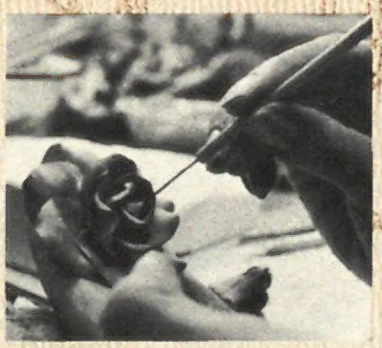

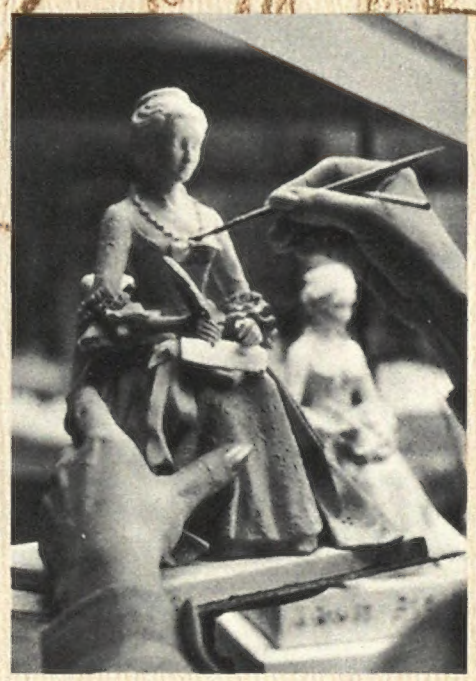

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May 1976

Smithsonian

Volume 7, Number 2

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Fedders heat pump air conditioner cuts winter fuel bills

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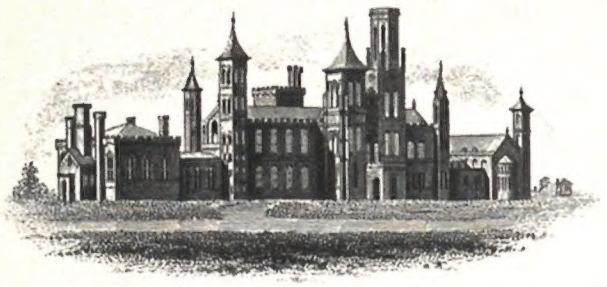
The view from the castle



While the Three Rs are declining in classrooms, we may have to teach them—objectively—in museums

We live in a time of increasing uncertainty about the purposes of education. Gone is the conviction that in our democratic society every citizen deserved the very best in the way of training and discipline of the mind which education purports to effect.

In the older days of the Republic it was assumed that life was a solemn responsibility, that one owed it to oneself to achieve the necessary knowledge by instruction so that, as a free American, one could participate, one could do one's part in helping to develop our great continent, to forge ahead shoulder to shoulder, "plowing a straight furrow" to an eventual and just reward—in heaven if not wholly on Earth.

What has happened in the first three-quarters of this century to deform these ideal precepts and to make the forces of education so insecure? Progressive education emerged as a fad in the 1920s, directly flying in the face of discipline as a force in education. Self-fulfillment became the watchword rather than any thought of partnership in a common enterprise. Self-fulfillment, a luxurious mode of thought, becomes appropriate in a so-called free-enterprise system, conscious by the 1950s of having the highest standard of living in the world.

But the democratic mode still persists as strongly as ever, so that a massive, paternalistic government infrastructure now exists to support thousands of rule makers and accreditors across the land whose purpose is to perpetuate the 19th-century concept of the opportunity of Three Rs for everyone.

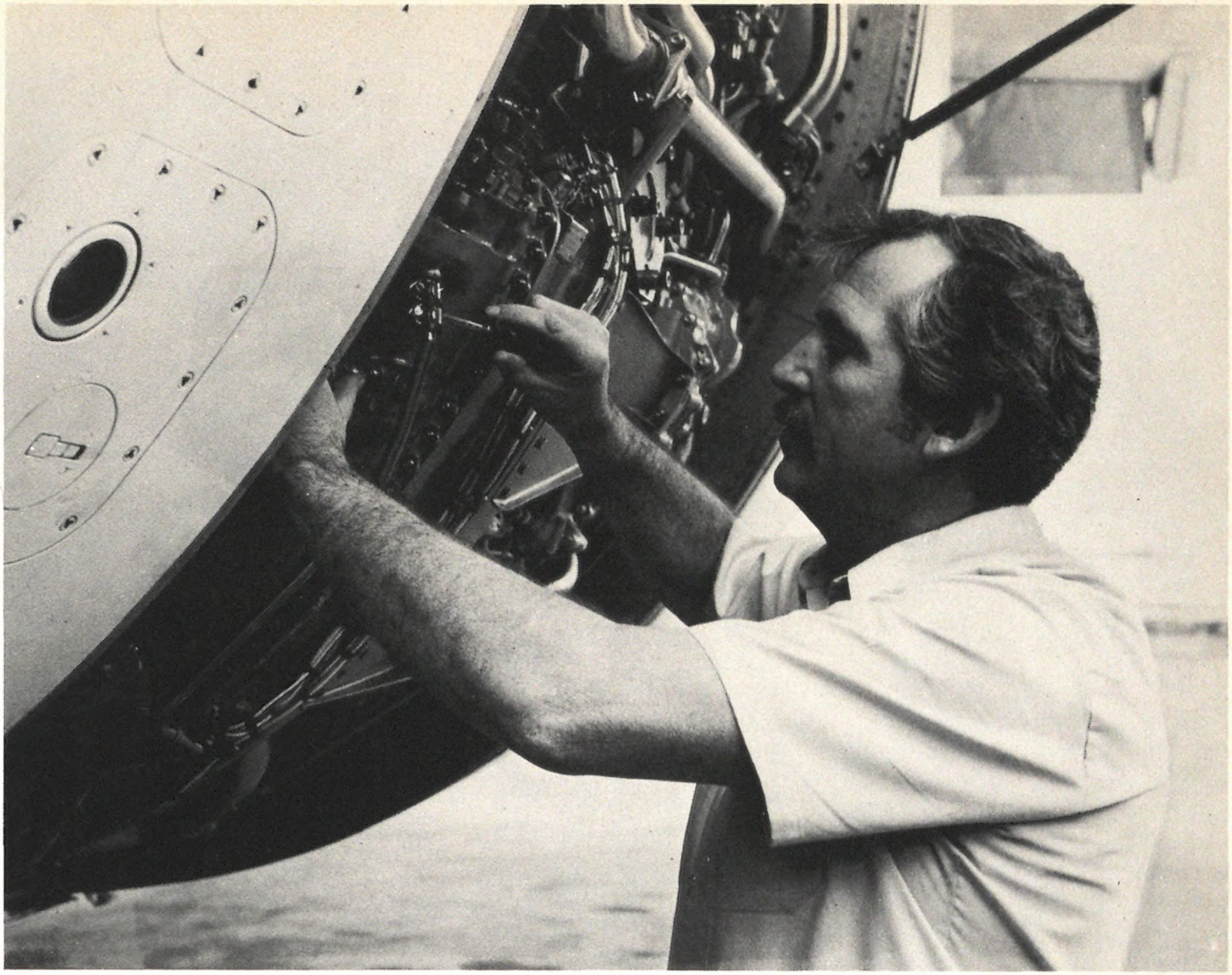
But what has happened to education? In the past 12 years the verbal and math scores on the Scholastic Aptitude Tests have been declining steadily—from 478 to 434 in math and from 502 to 472 in verbal skills on a scale from 200 to 800. Literacy is declining steadily, and it is not uncommon to find community and junior college graduates today whose reading ability is at the ninth-grade level.

The self-fulfillment syndrome was given a real boost in 1964 by the "free speech" movement which arose parallel with the distaste for the U.S. involvement in Vietnam, the flower children, protest movements and the new drug culture. As A.B. Giamatti pointed out in a recent issue of *Yale Alumni Magazine,* the language and the resultant literature of the new messiahs of this instant cult gave the coup de grace to the real learning of languages, including English. In this movement, language seemed to be an enemy allied to work and discipline and training.

At two levels something radical should be done, and soon. The higher level will perhaps find itself again, and the more brilliant students—*provided* the winnowing process still works—may, in diminished numbers, still emerge from the higher-degree hopper.

At the level of basic training in writing and literate skills I recommend, to counter the saturation level of television and its new mind-orientation toward objects—poppety-pop goes the toothpaste tube in Disney-like dances with the deodorant can—a new museum-like training using exhibits of objects associated with words to reinforce the learning process, just as Madame Montessori argued years ago. Perhaps museums *are* the new open university option for teaching?

S. Dillon Ripley



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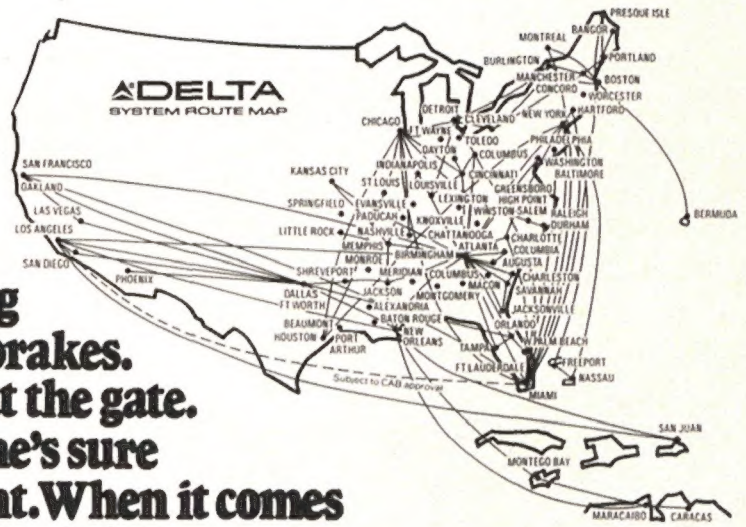

This is Delta's Wide-Ride™ L-1011 TriStar®, an $18 million superjet. Cabins are almost 19 feet wide. All 256 seats are two-on-the-aisle.

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Take another look at that girl in the picture. See how big her face is? The SX-70 was designed to let you focus from infinity all the way down to 10.4 inches from your subject. That's closer than you can get with almost any other camera without a special lens.

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In daylight, the SX-70 reads the light and sets the electronic shutter and lens opening—all automatically. When you're indoors taking flash pictures, the camera sets your exposure automatically as you focus. And it can also take automatic time exposures up to 14 seconds.

Rapid-Fire Shots

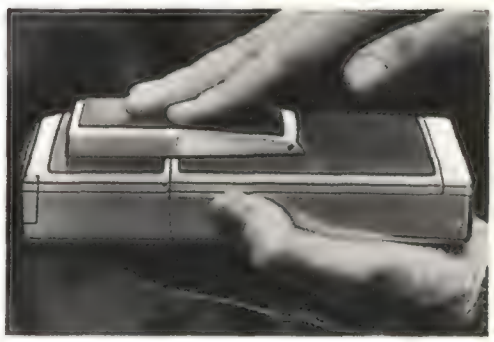
Most photographers would probably agree that what makes for a truly exceptional photograph is capturing that special moment—the moment that's not staged but spontaneous. The SX-70 allows you to take rapid-fire shots as fast as one every 1.5 seconds. (If you've never taken pictures this way, you must try it; you'll be surprised how good a photographer you really are.)

Much, Much More

Polaroid's SX-70 has a 12,000 rpm motor that propels the big, 3⅛" x 3⅛" color print out of the camera hard, flat and dry—with nothing to peel, nothing to throw away. Nothing to do but watch it develop.

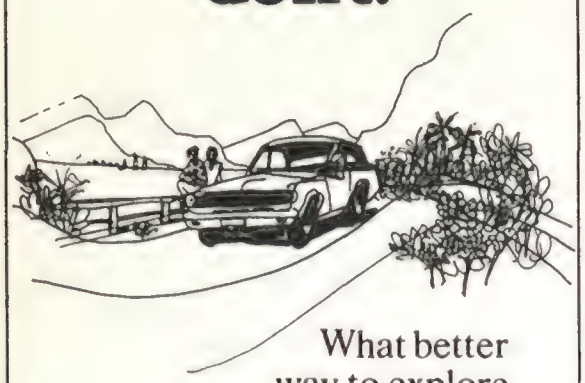
There's just one more thing we'd like to mention. That is the fact that all this advanced machinery is contained in a 24-ounce body (velvety chrome and leather, by the way) that folds down to a flat 1" x 4" x 7".

You see, we felt it was extremely important to make this camera so compact that you can easily carry it anywhere and miss as few of those beautiful moments as possible.



Polaroid

See the Hawaii most people don't.



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Phenomena, comment and notes

Magnets, turtles and extinction, lithium's limits, a nontoxic bus and predicting the people's quakes

"When the water rises in the well and the snakes leave their holes, the people should evacuate." That could be a quotation from Chairman Mao (though it probably isn't), for one of the major thrusts of Chinese science is earthquake prediction.

Thanks to the diplomatic initiatives of a gentleman named, of all things, Kisslinger (Carl Kisslinger, a geophysicist who was president of the Seismological Society of America), an exchange of earthquake specialists was arranged between this country and the People's Republic of China not long ago. The American delegation's report was published in *EOS*, the transactions of the American Geophysical Union (Volume 56, Number 11), a magazine of such exquisite opacity that rarely does a single paragraph come through clearly to the layman. According to the report, eclectic is the word for the Chinese program, not to mention huge: it "encompasses every prediction method that has ever been suggested in any part of the world." It uses vast hordes of amateurs and observation points. The activity of domesticated animals is carefully monitored for abnormality (they even watch for "irrational" behavior on the part of rats) as well as more recognizably geophysical signs.

Envious of the size of the program, the American earthquake experts chided that not enough computers are used, and that the Chinese are not sufficiently selective. If a zoo tiger died, they suggest, three days before an earthquake, tiger behavior would thenceforth be one of the indicators to be monitored.

Nevertheless, it works. At a UNESCO meeting in Paris it was revealed that between 1970 and 1972 the Chinese made 31 earthquake shock predictions of which 18 were accurate, 7 doubtful and 6 out-and-out failures. Last year at 2:00 in the afternoon of February 4, a Richter magnitude 7.3 quake occurred 400 miles northeast of Peking in an area considered aseismic. Ninety percent of the buildings in some areas were destroyed but there was minimal loss of life. Just about everyone had been evacuated that morning.

Take heed, California. Keep your eyes on those rats.

One-way street?

Earthquake prediction is, meanwhile, one of the major areas of joint environmental research by the Soviet Union and the United States undertaken as result of the small flood of treaties signed between the two nations in 1972. Other areas of major concern are the effects of environmental change on climate and the protection of northern and Arctic ecosystems.

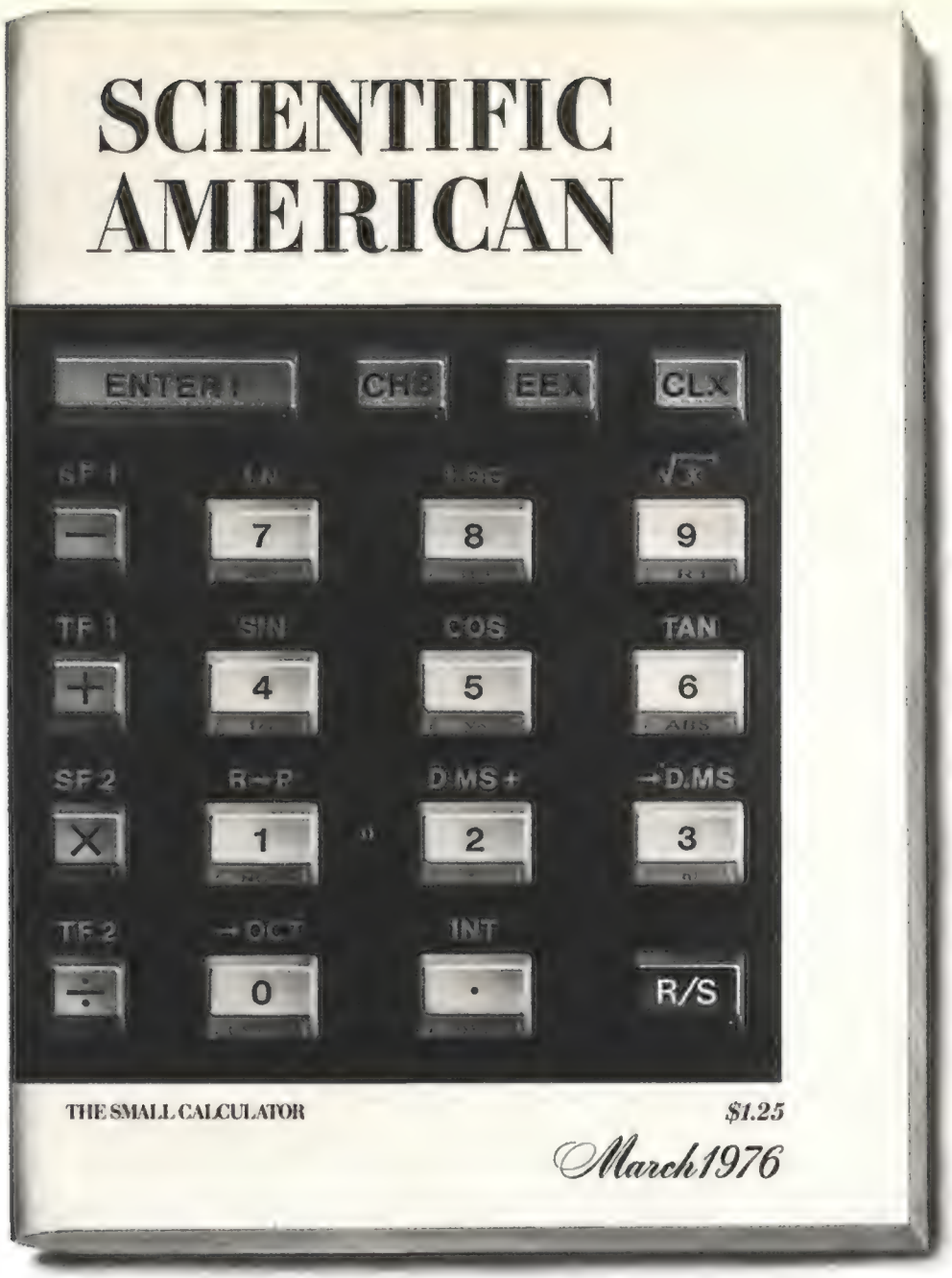
Last year the General Accounting Office issued a report that said the programs had suffered from bureaucratic delays and disagreements, but the American side's executive secretary, William A. Brown, is quoted in *Chemical and Engineering News* (Volume 54, Number 5) as saying that the report is dated and the programs are now getting off the ground, with exchanges of Russian and American scientists in full swing this summer.

Like the other aspects of détente (the word we are no longer supposed to use), the program is seen, by the GAO, as being of limited technical use to the United States. Perhaps as a result, U.S. funding of the projects is down. But Dr. Brown counters that these problems are global in nature and that any improvement in the USSR benefits the United States.

Geopolitics

Seismic types in Russia and China, then, are cooperating with their counterparts in the United States, but China and the Soviets don't, as everyone knows, get along very well, each fearing invasion by the other over their common border.

In the long run, the Soviets have less to fear. According to *Technology Review*



From the twinkle in its eye, to the clock in its heart

...an intimate look at small electronic calculators.

The cover story of the March issue of SCIENTIFIC AMERICAN takes you inside a typical small electronic calculator. While it is well known that the hand calculator's working turns on a tiny microelectronic "chip," few realize that the chip contains the major elements of a big computer —a central processor and an active memory. And what about the twinkle (that lights the light-emitting diodes) and the read-only memories called in by the function keys and the 250-kHz main clock (12,000 clock cycles for a simple instant addition)?

"For millions of people," says Eugene W. McWhorter, computer engineer and author of the article, "arithmetic will never be the same again."

For the regular readers of SCIENTIFIC AMERICAN, McWhorter supplies the latest installment in a continued story. Starting with "The Transistor" in 1948, we have informed our readers step-by-step of the advances in hardware and software that have culminated in this hand-held revolution.

The same is true on all the other frontiers of science. Our readers have kept up-to-date with such diverse and profound developments as the recognition of continental drift, the unlocking of the genetic code, the new close-up vision of the solar system, the multiplicity of elementary particles, the discovery of the tool-making ancestors of man, the nerve circuitry that structures human perception.

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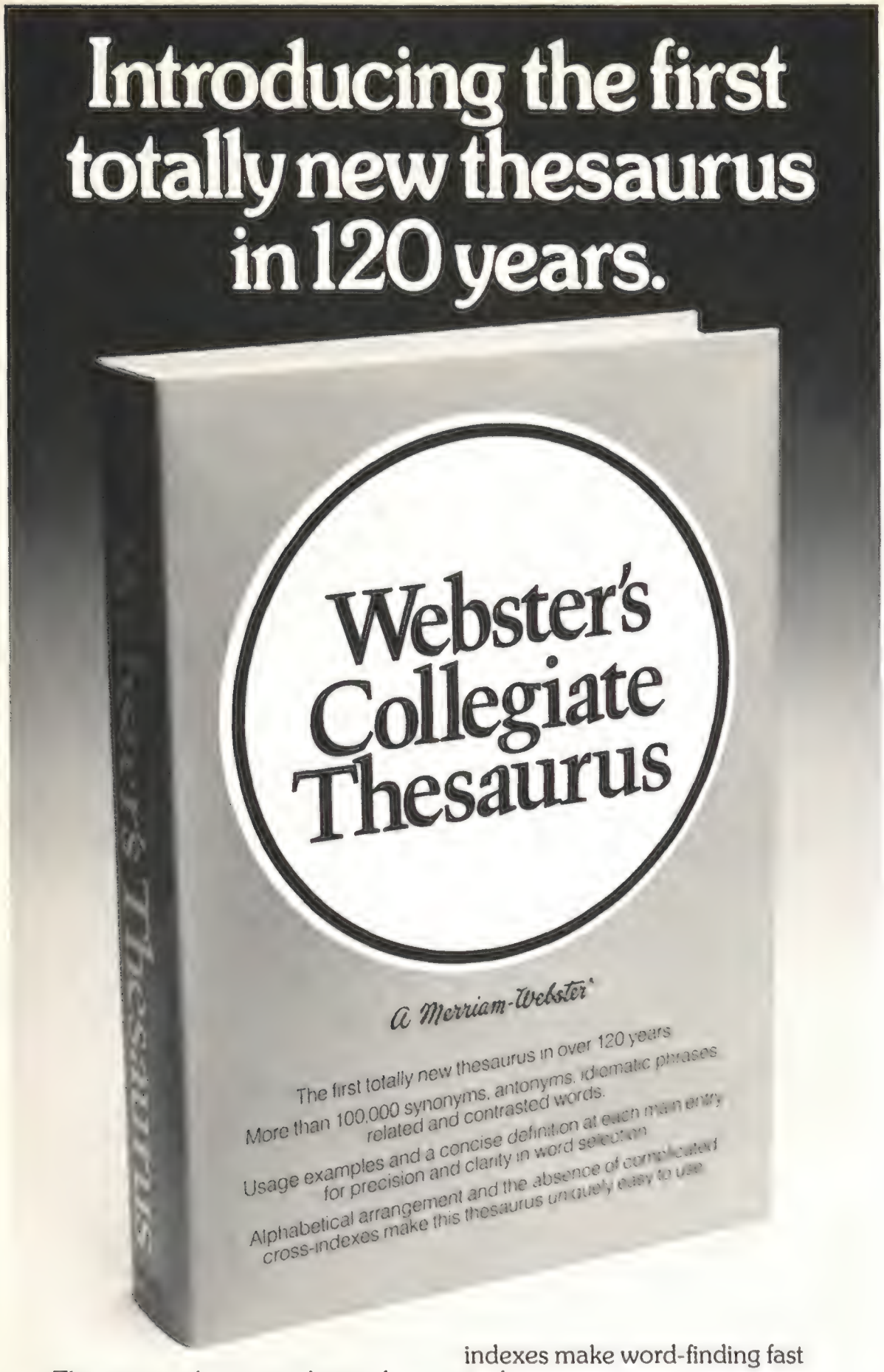
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(Volume 78, Number 3), specialists in plate tectonics have concluded that China —the whole place—is moving east at a rate of more than one inch per year.

The lithium connection

While fusion engineers have enjoyed a recent surge in optimism, dreamers about this "limitless" energy source were reminded by a recent conference in Colorado that there is, after all, no such thing as a free lunch. The conference was about lithium, which is what you get tritium from, and tritium, along with deuterium, is the fuel for fusion reactors. Deuterium is in virtually limitless supply but lithium is not.

According to *Science* (Volume 191, Number 4231), James Vine of the U.S. Geological Survey thinks that demand for lithium will exceed supply by a factor of two in the year 2000. The reason: lithium is also a key ingredient in a newly developed, far more efficient battery that the federal government hopes will make electric cars truly feasible and will also make electrical storage by utilities economic. Indeed, the Energy Research and Development Administration's estimates for these two uses of lithium-sulphur batteries between now and the year 2000 call for all the known lithium available in the ground—if you believe Mr. Vine's estimates. That means none left for fusion, which is scheduled for full-scale development at the turn of the century.

The lithium industry, which *Science* says is "small and guards information very closely," claims that there's a lot more lithium around than the USGS thinks and not to worry. Still, it would seem like a good idea to have another conference on the subject.

On busing

In another energy development, there is now a converted Winnebago bus (capacity 19) plying the highways between Provo and Orem, Utah, a distance of some 13 miles, in an area that suffers from severe air pollution during the winter. (Air pollution in Utah? Is the world coming to an end?)

This experimental bus, its creators expect, will add no air pollution to Utah. It runs on hydrogen. Hydrogen and air are mixed in the carburetor (a minor modification to the standard equipment).

A great dinner, cont'd.

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With no carbon in the fuel, the only pollutant would be oxides of nitrogen, but these are avoided by inducting tiny droplets of water (condensed from the exhaust) into the combustion chamber.

With visions of Hindenburgs dancing in the public's heads, the hydrogen bus makers, the Billings Energy Research Corporation, have stored the fuel in non-gaseous form in metal hydrides. The bus, Billings claims, will go 100 miles without refueling. And the hydrogen, they say is cheaper to produce—from low-grade coal —than the cost of refining gasoline.

It seems that, indeed, this is a bus worth waiting for.

A poise for silence

Last month we heard about Ambisound, a British invention whereby the listener is totally surrounded by sound. This month brings news of an even more sophisticated intrusion that is on the drawing boards: holographic television.

Holography is the technique whereby, with the use of lasers, one can produce a three-dimensional image. Its inventor won a Nobel Prize for it, but holography is still in its developmental stages and appears to many to be a technology in search of a function. Now *The Futurist* (Volume X, Number 1) suggests that in 15 years we may be able to "create an endless variety of pleasantly ambiguous or structured forms which float through the room bobbing to piped-in electronic music." The lonely shut-in may be able to create a host of friends. Harvey the rabbit will become more than an image in Elwood P. Dowd's mind.

The Futurist goes on to say that " the teen-ager may lose all poise when his favorite rock group is optically created in the living room complete with quadraphonic sound." All very well, yet one cannot but think that it will be the parents, and not the teen-agers, who will lose all poise.

The turtle as compass needle

Legends abound in Central America about turtle-shaped rocks that face the sea but occasionally turn like compass needles to face inland. At such times, the sea turtles return to their traditional nesting beaches. The legends are no doubt ancient, and one wonders if their source may not have been found by

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Vincent H. Malmstrom, a geographer at Dartmouth College.

He reports in *Nature* (Volume 259, Number 5542) the discovery of "strong circumstantial evidence" that the pre-Columbian people of Izapa, in Chiapas state on the Pacific coast, knew about magnetism and may have associated it with the navigational abilities of sea turtles. (Other scholars have found such things as a shaped piece of hematite, which the Olmecs must have used as a magnet.) The Mayans were familiar with mercury, in which one can float magnets.

Dr. Malmstrom's evidence is a large stone turtle head. No matter where a compass is moved along the perimeter of the head, the needle points to the turtle's snout. Other nearby sculptures include a representation of an upturned turtle shell, an excellent bowl for floating a magnetic needle on a piece of wood. "It may be interesting to note," writes Dr. Malmstrom, "that the theory that turtles navigate by magnetism has not yet been discounted."

Is magnetism hazardous?

Elsewhere on the magnetic front, *Science News* (Volume 109, Number 13) reports some speculation that reversals in the Earth's magnetic field may have led to extinctions of species on a grand scale. Species of radiolaria, foraminifera, even mollusks, vanished for good during the times of magnetic reversals.

No one knows the mechanism: it might be that with weakened magnetism, more cosmic rays strike the Earth, or that the climate changes drastically, or that the ozone layer is reduced, permitting an excess of ultraviolet to hit the Earth. Some say there is no mechanism, no cause and no effect.

Perhaps the sea turtles know. After all, if they do navigate by magnetism, things must have gotten pretty confusing for them during times of reversals.

Trivia

Farm Journal has one for the folks who produce the Guinness Book of Records. A North Carolina farmer named Edward E. Weeks has just broken a 40-year-old record by growing a watermelon that weighs 197 pounds. The melon contained 1,717 seeds.

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"Have a good flight," you reply.

Sound familiar?

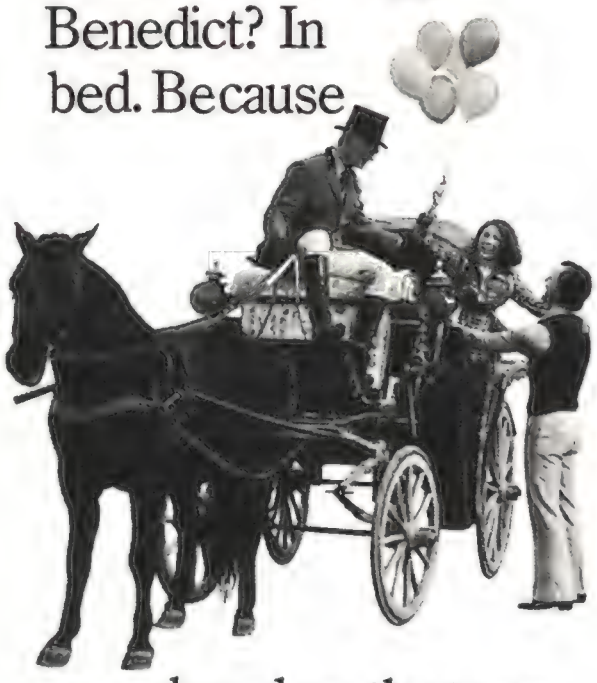
How long has that simple dialogue been going on?

When's the last time the two of you got away? *Really* got away.

Was it a year ago? Five years ago? Or was it as far away as marriage day, plus one?

If your partner is a seasoned traveler, his days away from home aren't a bed of roses. A hotel room at 6 p.m. isn't exactly Times Square on New Year's Eve. And a lonely order of quiche Lorraine, even in the most elegant place in town, will never supplant companionship.

When was the last time you explored a new city while he took care of business? Or the two of you slept in 'til 11? Had eggs Benedict? In bed. Because you closed up the town the night before.



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Man was not meant to fly alone and woman was not meant to stay at home.

And to get you off the ground, we'd like to make

GOING TO LEAVE YOU.

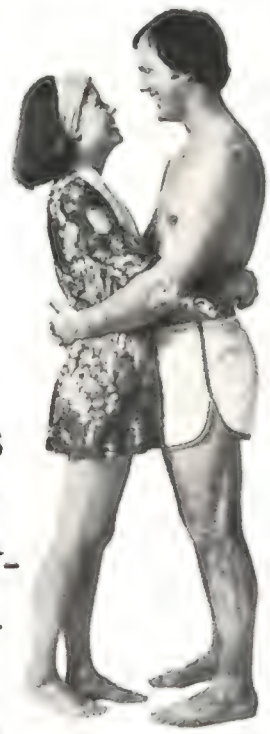
a few suggestions for the year 1976:

1. It doesn't have to be a sudden fling. The two of you can plan exactly when you can get away. If you go before June

and after September, you'll have a better choice of plane reservations and accommodations.

2. It doesn't have to be scheduled entirely around business. If he can plan his meetings Wednesday through Friday, the two of you can stay over for the weekend. Or take a mini-vacation into Monday and Tuesday.

3. It doesn't have to be a single-city trip. Arrange a stopover flight on the way back. Your travel agent or airline can help you here.



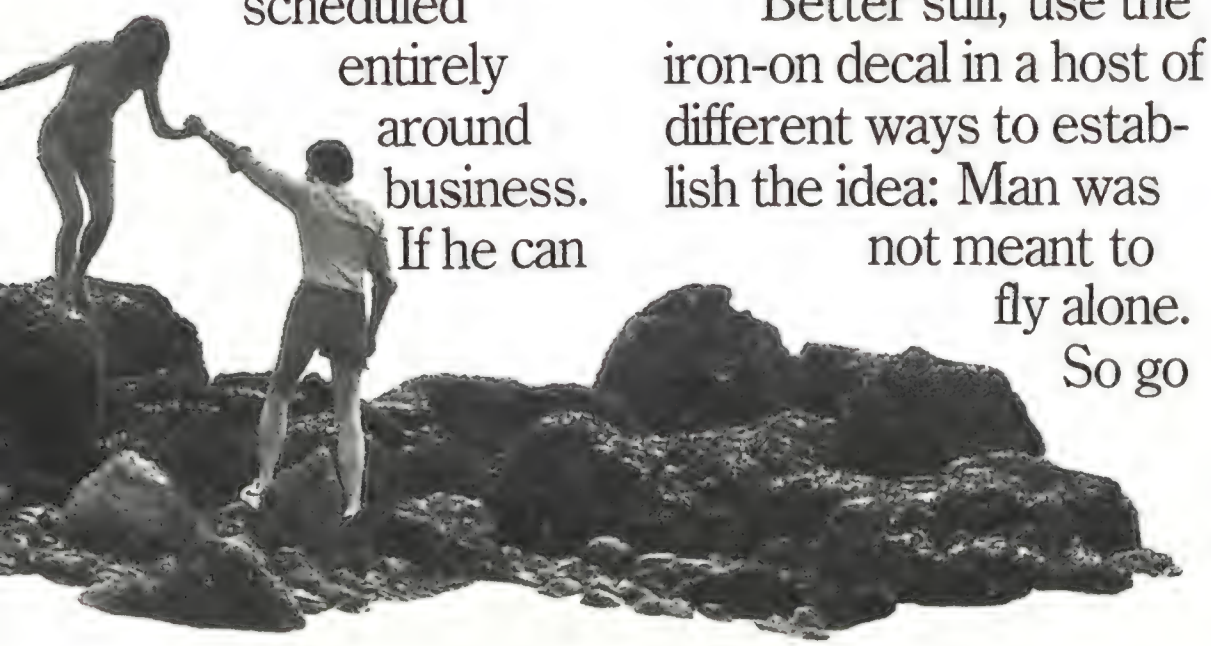
Share this idea with your partner in travel. Clip the reminder in this advertisement as a not-so-gentle hint.

Better still, use the iron-on decal in a host of different ways to establish the idea: Man was not meant to fly alone. So go do it! Don't wait around. Wives have been

known to grow ten years younger on trips with their husbands. And vice versa.

There's a Boeing jetliner waiting to take you anywhere in the world.

Woman: unground thyself.



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Letters to the Editor

Chinese peasant paintings

Dear Sir: There is more to the Chinese peasant paintings than meets the eye, or than was noted in Rudolph Chelminski's article in the March issue. Communist art, from Havana to Hanoi, may sometimes do more than serve the ideological interests of the one-party state. Less conformist expressions, as represented by some of the works of the Hu-hsien painters, are notorious for the "Aesopian language," or message that may be read between the lines.

In the case of nonconformist Chinese artists, at the height of the Cultural Revolution in the late 1960s several double-speak works of art became known to the West. One of the most famous showed Mao's face concealed in a field about to be trampled upon by a handful of hard-working peasants. The picture gave the impression that the Chinese leader was about to be done in by his own peasants.

Several such "statements" seem quite evident in the paintings reproduced in your article. For example, *Exchanging Experiences in Breeding and Management* shows horses in human poses. They "talk" and tend to their offspring, all in uninhibited freedom and with curiously happy expressions on their faces. This syndrome of freedom is juxtaposed to several severe elements in the painting: the speaker's table with the bare microphone and stacks of propaganda leaflets; the peasants, dressed in their drab clothes, look mechanical. The message seems to be that horses are free, people are not.

Albert L. Weeks
New York University
New York City

Dear Sir: Peasant painters in China was fine, and I call attention to a facet of their art which is uniquely their own—namely paper cutouts.

These are available in Hong Kong, in sets of about a dozen, with a variety of themes. I chose the dragons, for the present year [see below].

Measuring about four inches, they were too small and delicate for much more than small frames. However, after enlarging them photographically, I now have four murals (two by three feet framed), which fit into my exhibit of Chinese art.
Zachary Taylor
Ivy, Virginia

Theatre of the Deaf

Dear Sir: One must admire the efforts of the National Theatre of the Deaf, as described in Jean Stratton's article.

It would be unfortunate, however, if audiences gained the impression that the use of sign language by the deaf permits a full life. It does not—on the contrary it restricts them to communicating only with others using sign language or by means of written messages.

By way of contrast with the National Theatre's approach, the St. Joseph Institute for the Deaf in St. Louis (now in its 140th year) produced a sound-color motion picture of the *Wizard of Oz.* Deaf children in the middle grades of the Institute, taught by the auditory-oral technique, performed all the parts, spoke and

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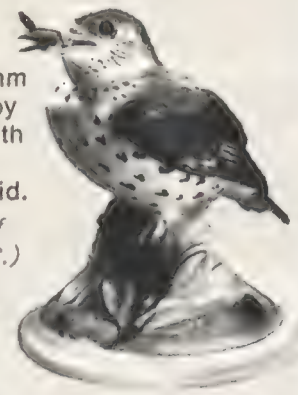

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sang and put on a splendid performance. The film has had national distribution.

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Robert A. Willier
Board of Directors
St. Joseph Institute for the Deaf
St. Louis, Missouri

Liberia

Dear Sir: Paul Boorstin's perceptive article on Liberia brought back many memories.

Liberia is a striking example of miscommunication and misunderstanding generated by cultural differences, and it is incredible that it has survived.

I, myself, was an Episcopal missionary to Liberia. My wife and I went there in 1964 full of zeal and green as grass. The missions there helped and they hindered. It is a fascinating, wonderful chapter in the art and science of human learning and adaptation. God certainly does work in strange ways.

In the past, most of the schools were mission schools, most of the officials and professionals were trained in them, and missions were big in Liberia.

So, there we were—three groups: missionaries, black colonists deriving from the United States and the natives. Each group mistrusted and misread the other two. Liberia proved to be a frustrating, quarrelsome place to everyone there.

It was readily apparent to the colonists that if the natives ever got the benefit of the Missionary Movement, rather than themselves, there wouldn't be a colony for long. There was no question in their minds concerning the power of the white man's civilization. They had known it firsthand. So the colonist clung desperately to the world he knew even if it only meant antebellum houses and tuxedos in the jungle.

Liberians were (and still are) seen by many as arrogant, high-handed, corrupt and internationally silly. But the Americo-Liberian never laid claim to perfection. His struggle to survive didn't purify him; it only permitted him to live. Purity must be the prize of future generations.

Discover the infinite variety that is Ethiopia.

Ethiopia is many things. Be sure to explore them all while you are in Africa.

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Because most of Ethiopia lives atop high plateaus, the climate is among the best in the world. Days are polished and bright, nights are clear and crisp. The land is rich in natural beauty. From lake country to riverine forest and acacia woodland, from the Simien and Bale mountains to Awash National Park, Ethiopia's flora and fauna is diverse and abundant.

Above all, Ethiopia is people. People with diverse, colorful, ethnic back-grounds. People who speak more than 70 languages and nearly 200 dialects. The sound heard most often is Amharic, the national language.

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And those odd missionaries—what an incongruent bunch of birds we were! Frustrated, energetic, idealistic, determined, loving, blind missionaries. For most, their work turned to ashes before their eyes, and nothing ever seemed to go right. And we never really understood the colonists' game. And yet, most kept plugging away. Because they did, Liberia was able to survive. Perhaps the Christ was in Africa all along and the church is just now able to see that. The cause, for all its clumsiness, was not void of meaning.
Dean A. Holt
Columbia, Maryland

Dear Sir: There is one slight discrepancy in your article on Liberia. The Liberians do celebrate Thanksgiving, but it is recognized on the first Thursday in November rather than the American date.
Frank D. Ashleigh
San Marcos, California
Mr. Ashleigh is correct. Liberians will celebrate Thanksgiving on November 4 this year. Ed.

Goddard's rocket

Dear Sir: As Michael Kernan's article points out, it was the Smithsonian that first backed Goddard's rocket research. But it is interesting to note that Charles Lindbergh (p. 58) was also influential in that he persuaded the Guggenheim family to advance Goddard $100,000.
Harlan A. Gurney
Woodland Hills, California

HeLa cell

Dear Sir: In your article relating to the HeLa cell, the opening photograph was taken in our laboratory, American Type Culture Collection.
Richard Donovick, Director
Rockville, Maryland

Dear Sir: In the late Thirties when I was a technician in a large hospital, we were taught the importance of sterility in making cultures. I find it unacceptable that the HeLa lab technicians should be so careless, causing contamination. But my thanks go to the author, Dr. Laurence E. Karp, for even admitting there was a "sloppy technique" in medicine. That's a start!
Elaine Justice
Shippensburg, Pennsylvania

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Phenomena, comment and notes

Dear Sir: A teacher's ear is rarely as close to a screaming child as the sound level meter used in the experiments you discussed. At one foot from the screaming child, a sound pressure level of 108 dBA exists and it would require more than a half hour of exposure [for a prolonged period of time] to risk inner-ear damage. Since it is unlikely that a child would scream for half an hour at this intensity, perhaps children should not be considered as occupational hazards. However, we all agree that noise annoys.

Neal Sloane
Graduate student in audiology
Ohio University
Athens, Ohio

Dear Sir: The Australian scientists' conclusions about the quokka question reminds me of a book of some years ago, *Possums* by Carl G. Hartman.

Dr. Hartman agrees that the upward travel of newborn opossums and other marsupials, regardless of the position of the mother, cannot be due to a response to the sensation of gravity pull, because at birth the young do not yet have semicircular canals or other discernible balancing organs. His experiments show that the young crawl upward because all "directed" movement is accomplished by the front feet. The rear of the little animal hangs passively, pulled downward by gravity. If the creature moves at all, it must automatically move upward, for it does not yet have the ability to move in any other direction.

Marie M. Jenkins
Emeritus professor of biology
Strasburg, Virginia

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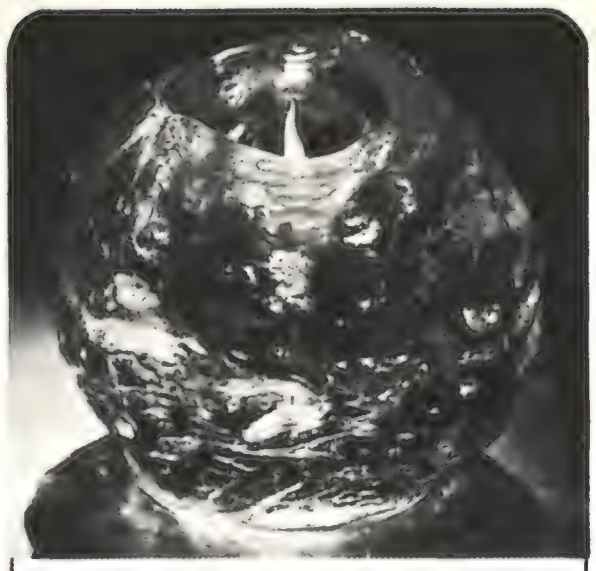

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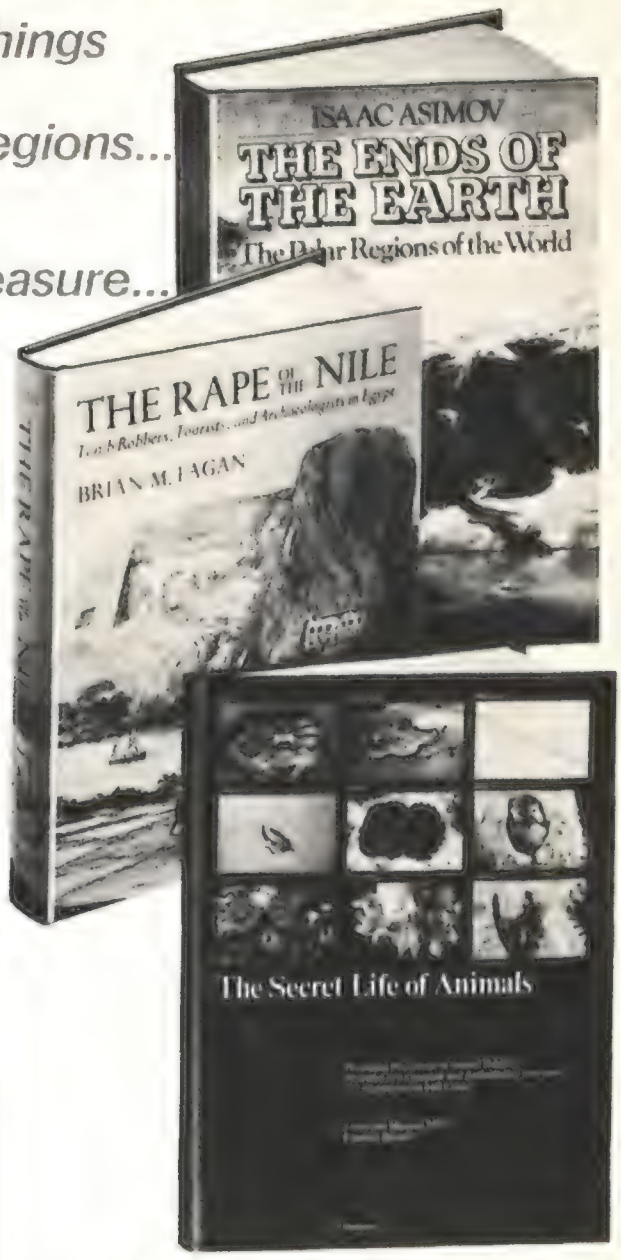
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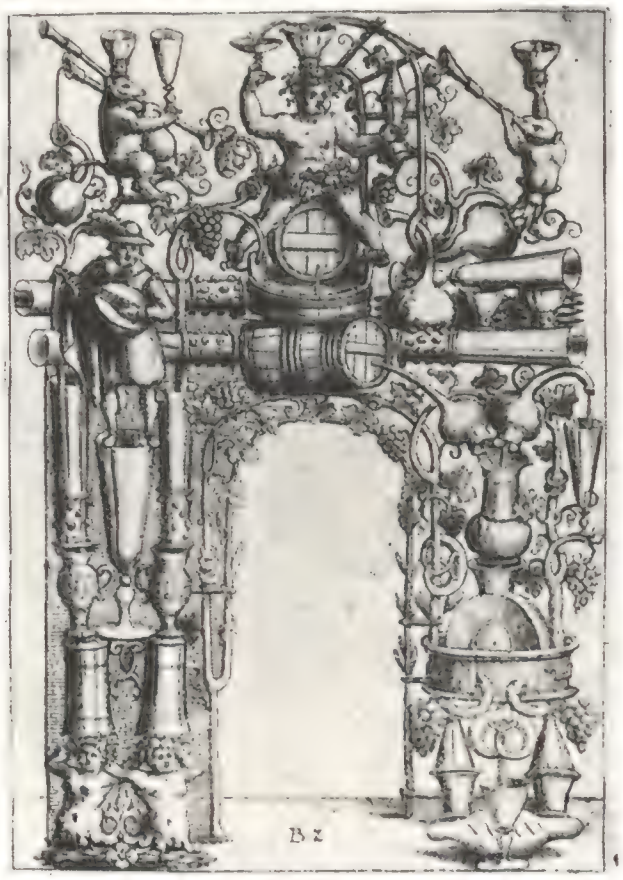

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Around the Mall and beyond

"A Nation of Nations," the exhibit that opens next month at the Museum of History and Technology, will display an extraordinary collection of items that play a part in explaining our American culture and the fact that it's fabricated from a conglomeration of cultures. One area of the exhibition is called "Shared Experiences" and demonstrates that differences in our ethnic or national backgrounds matter not a whit when we sit side by side absorbing some cultural event. And a section of this part of the exhibit is called "Shared Excitement," which deals with that good old American cultural event—the sports spectacular. After all, who cares a fig whether the person either watching or playing next to you is of Polish extraction from the Pennsylvania mining country, or is a Canadian from Trois Rivières who cannot speak a word of English, or is a Black Muslim whose ancestor was the slave of some Kentucky Colonel? Certainly not the Notre Dame football team or its myriad supporters, nor the National Hockey League and its bloodlusting fans. And certainly not Muhammad Ali, nor the unfortunate who is sharing the ring with him.

As the national news media made clear, Ali was asked if he cared to donate a pair of boxing gloves to "A Nation of Nations" for inclusion in the "Shared Excitement" display. He agreed, threw in a robe and brought the items in person.

The result was pandemonium. Museum Director Brooke Hindle and postal history curator and "Nation of Nations" chairman Carl Scheele straightened their ties to accept the presentation. Guards were mustered to keep order. Children, alerted by some mysterious signal drum

Brooke Hindle and Muhammad Ali

that throbs in their heads at such moments, swarmed expectantly. And sure enough, a very long limousine whispered up to the front door, Ali emerged, and suddenly the sky was filled with TV crews, radio announcers, cameramen, photographers and sports reporters, pressing around the champion and asking him questions that produced the desired answers about being "the Greatest."

Ellen Roney Hughes, however, comes up with an impression of Ali that will have to be suppressed (after this, that is) or the press reports will lose all their credibility. Ellen is the coordinator of the exhibit who first asked for the gloves and who acted as Ali's guide.

Ellen says that Ali struck her as a quiet and gentle man, soft-spoken and rather in awe of the museum. He was fascinated—as is everyone—by the pendulum that knocks down little red figures to prove that the Earth is rotating. He was concerned about whether people would be able to touch things in the exhibit. He hoped they wouldn't touch *his* things. Yet he was not really overwhelmed with the importance of the gloves and robe, as reported. "You really want my gloves?" he asked Ellen.

Ali's progression through the museum was easily traced by the barrage of flashbulbs and when the hordes of children pounced joyously upon Ali, he would bend down and hug them. "A nice man," says Ellen. "And some kind of *big*!"

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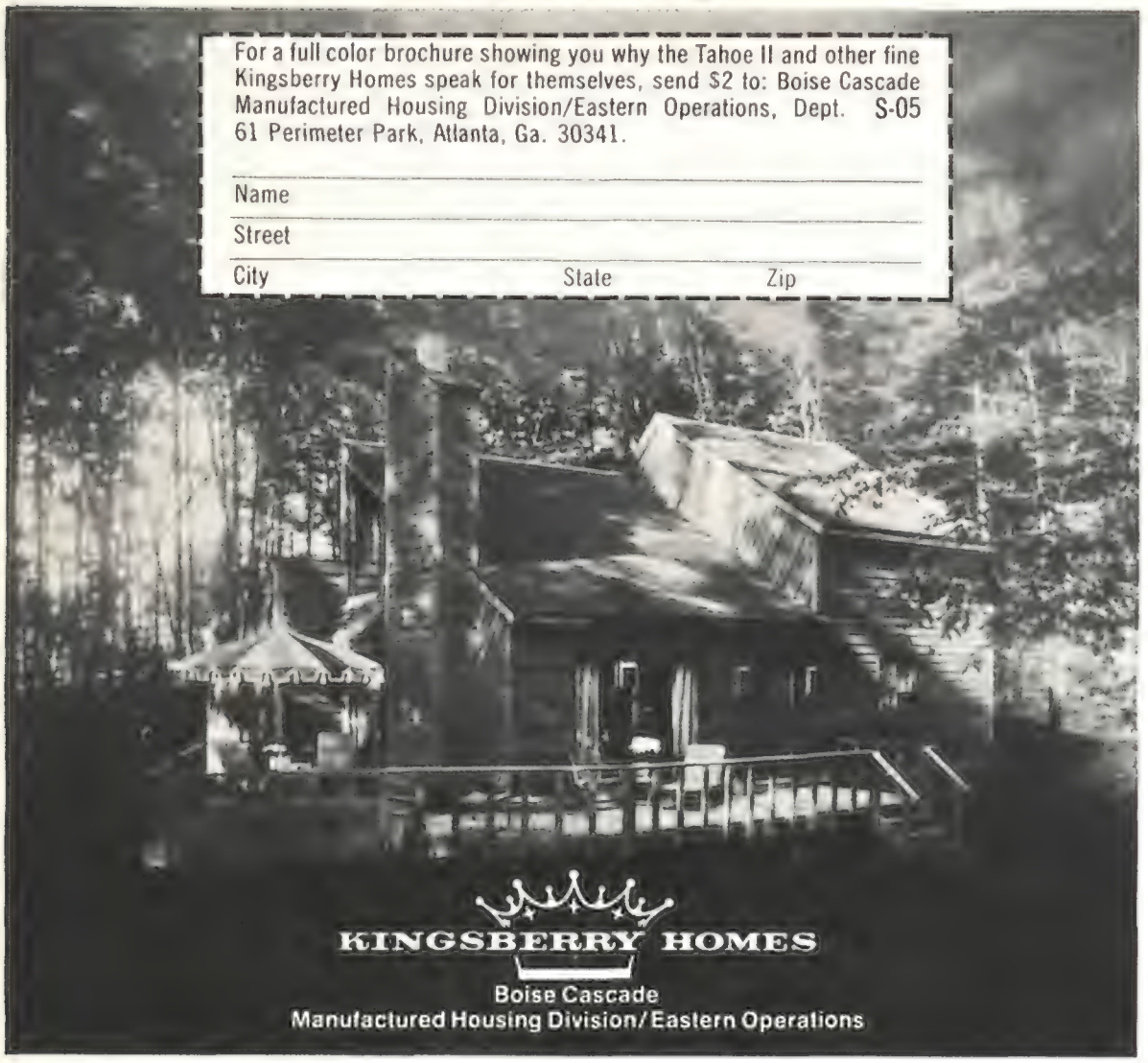
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As an unforeseen addendum to the "1876" exhibit described in this issue, Bill Miner, its coordinator, has received a time capsule from 1876. We hear of these things being placed in cornerstones or tucked away in secret drawers for future generations to find, but we don't often hear about what's inside them.

This one was put together a hundred years ago by the Third Ward pupils of No. 10, Des Moines, Iowa. It is a collection of their stories, essays and poems, illustrated with careful pencil drawings. It has been reposing in a mahogany box with a silver plaque on the lid. The preface, beautifully handwritten (whatever happened to *that* skill?) explains itself:

"In this Centennial Year we are constantly reminded of the times and incidents of those who lived one hundred years ago. Through the press and—by the Martha Washington Tea Parties, and Centennial Plays, and Songs and Stories and Pictures—we have come to know how our forefathers lived, dressed, talked and acted about as well as though we had lived in their stirring times. When all the men were heroes, and all the women were brave and loyal. But in all the stories of the past, we hear nothing about the school children. In the Martha Washington Tea Parties, we look in vain for an old time representation of a 1776 School Marm, with the habitual weary look on her face, and the rod of power in her hand. Either there must never have been so noted a personage, or her glory departed with her. It would be a great source of comfort to the school boys and girls of today, if they could only know something definite about the scholars who lived one hundred years ago. If they studied and could not learn. If they whispered and played, and ran away from school, and had lectures day after day, on propriety and dignity, and the great part they would have to act when the glory of the United States of America should rest with them. If they had written monthly examinations and ever fell below the dreadful 80%. A thousand other important questions rise in our minds and no answer is found.

"That the boys and girls of 1976 may have some tangible evidence that there were school teachers in 1876, and boys and girls lived and studied and suffered all the ills that school life is heir to, we have written this book, and it is to be sent to Philadelphia to the Centennial

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Exposition, and then presented to our worthy teacher to be carefully kept, and left to someone who will faithfully promise to send it to Des Moines in 1976 to be shown to the boys and girls of that time. So they may see what those whose places they fill, left as a memento of school life in 1876."

There are a great number of contributions to the book, which Miner plans to get published, along with those delightful sketches. As a sampling of the kind of essay it includes, here is something by Jennie McFarland entitled "The Girl of the Period":

"Have you seen her?

"Well we have, and we should like to make a few remarks—She is the girl that lies in bed in the morning and goes walking for her health in the afternoon—She is as fair and fresh as an old maid of forty, who uses Lairds bloom of youth. Her hair is done up 'ala' French twist, top of which is a superb seal skin cap. . . . She wears a silk handkerchief tied around her neck—Her cloak is made after the latest style and fits like the paper on the wall—Her dress is seal brown or navy blue trimmed with shirring and pleating—bows down the front and also tied back—She wears box toed boots with thick soles —She is not very well acquainted with the correct usage of her own language—But speaks 'currant slang' quite fluently.

"She is also acquainted with the language of the handkerchief, glove, and fan —She has a smattering of all the common branches taught in the public schools—she has trials and tribulations like all the rest of us—for many a time she burns her face trying to get her frizzes exactly right. Those box-toed boots are often a little tight some other girl has a nicer dress than she—all these things vex and trouble the girl of the period.

"I will close hoping the girl of the next period, will be an improvement to this."

Apparently the teacher asked this group of children to compose a rhyme apiece in five minutes. Here is a sample:

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eighteen seventy
And it stands on a beautiful hill.
I hope it will remain until
nineteen & eleventy
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Ida Skinner

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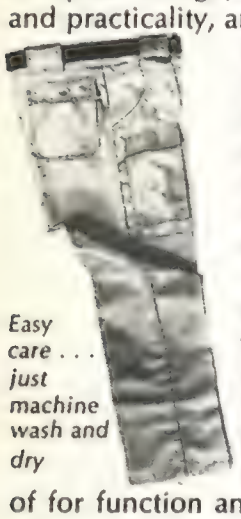

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the children of 1876, I found myself moved. I was put in a mood of mourning —not for those long-ago children, but for so many of today's, whose impression of school is so totally different from these impressions, and lacks so much of the sense of quality, of striving, of pride in work. The teacher with the rod in her hand seems to us an antique image. But she got results with enough quality to stir us 100 years later. The ages of the pupils are not much mentioned. Two ages appear in the book: 11 and 14.

Third Ward Number 10 of Des Moines did live until "nineteen eleventy," by the way, but not much longer. It was torn down in 1926, more's the pity.

The article that appeared in our March issue dealing with the Brigade of the American Revolution mentioned the making and the drinking or otherwise absorbing of syllabub. That is a wonderfully archaic word which evokes a custardy image, and I determined to track down just how it was made.

The results of my probe have been frustrating and ever more thirst-producing. Every Colonial cookbook seems to contain a different recipe for syllabub. Some were to drink, some to eat like dessert—a custardy one at that, it turns out. Yet most references were to *drinking* syllabub, and my thirst grew greater.

One source, at last, produced a common denominator by pointing out that the derivation of the word indicates a marriage between "Sill" (a French wine) and "bub" (Elizabethan slang for bubbly). Presuming that our Revolutionary ancestors were too busy to make a big production of syllabub, I settled upon a quick "whipt" syllabub which I could easily picture the troops at Saratoga whomping up at a moment's notice to keep out the autumn chill. I heated some wine, added some cream, sugar and nutmeg and beat the whole thing until it was good and bubbly. Then I took a deep breath, and down she went, subduing that by-now-mighty thirst.

It was quite nice, but very strange. I had a warm feeling, but felt that I had absorbed a great many calories and that my thoughts were going fey. I slept uneasily, full of wild dreams.

My impression, now, of the American Revolution is that it was won by stout people who were all slightly pixilated.

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3

Arts and Industries Building, begun in 1879, contrasts sharply with new Hirshhorn Museum, foreground.

By Lynne Vincent Cheney

1876, its artifacts and attitudes, returns to life at Smithsonian

As a Bicentennial gift, the Institution marks the Centennial in an old museum, newly filled with Victorian wonders

Nickel and brass gleam from surfaces of this steam-driven fire engine on exhibit with other machines of its day.

Because it celebrated the nation's 100th birthday, the 1876 Exposition in Philadelphia's Fairmount Park was special. There had been world's fairs before, but never one that displayed so lavishly the inventive genius of the United States. Machinery Hall awed visitors. The towering Corliss engine (p. 49) was one of the exhibition's most thrilling sights, especially when its 56-ton flywheel was revolving.

Over in the Main Building, another of the more than 200 specially built structures, one could see Japanese silks, Belgian wood carvings—an abundance of foreign displays. But here too the United States tended to dominate the party it was giving, not just because

Color photographs by Robert Lautman

Original painted embellishments over and in archways of Arts and Industries are visible above. Today's refurbished building, below, restores decor—except for Chester A. Arthur's monogram.

Two construction foremen at Arts and Industries dressed up for photograph above, then pasted it

of the Yale locks, Scott stamps and Pullman berths, though such products were exhibited in dazzling profusion, but because of the Main Building itself, a 20-acre iron-and-glass affair reputed to be the world's largest structure.

All this is being commemorated this year by the Smithsonian Institution. "1876: A Centennial Exhibition," which opens on May 10 in the old Arts and Industries Building, is the largest special exhibition the Smithsonian has ever mounted. Thirty-five divisions from the Smithsonian museums, mainly the Museum of History and Technology, have gathered together some 25,000 objects of the Centennial period and displayed them as the exhibitors in Philadelphia did.

Absent is the reverence with which important objects are often exhibited today. Instead, the labels we see, like the ones the Centennial visitor saw, have prices and puffery on them; there is an enthusiastic crowding together of totem pole and lighthouse model, of steam engine and elevator. The feeling one is left with after viewing the gaudy extravagance of "1876" is less of having been taught about the past than of having been in it.

This impression is heightened by the building which houses "1876." The Arts and Industries Building was built originally to hold a trainload of objects from the Philadelphia exhibition. It captures the Centennial mood—an abundance of roof angles and window shapes, bright stenciled patterns on interior walls.

Author Cheney, a Washington free-lancer, wrote about feminist Alice Paul in SMITHSONIAN, *November 1972.*

on solemn dedication picture of committeeman Dr. Peter Parker, Secretary Baird, architect Cluss.

Giant Krupp guns dominated the German section of Machinery Hall in Philadelphia Exposition. At the Smithsonian's counterpart, two enormous Civil War coastal defense cannon fill the bill.

With guidance from Smithsonian's architectural and engineering staff and consulting architect Hugh Newell Jacobsen, scores of workmen have been painting and polishing the grand old building inside and out. To the west of it, gardeners have been at work transforming a parking lot into a Victorian garden.

For several reasons, Arts and Industries has not been restored exactly to the way it was when it was new. The lamps that help illuminate "1876" evoke the past while paying heed to present necessities. They look like the gas lamps that hung in several buildings at Philadelphia 100 years ago. But they are electric, designed by "1876" project manager William F. Miner, with the help of photographs and knowledge of 19th-century tools and materials.

In Machinery Hall, particularly, the exhibits speak loudly of the unabashed pride their makers took in them. Even the most megalithic flywheel is brightly decorated, and even modestly sized machines have a dash and audacity about them. The Rogers double-spindle shaper in the woodworking display, for example, has a fierce pair of gilt-relief eagles decorating it.

The shaper, like the other machines in the hall, has been painted and refurbished to look like new. While ordinarily evidence of wear and tear on a century-old object would be preserved as part of its history, for "1876" it was decided to restore the machines and other objects displayed so that they look as they did at the Centennial: bright, shiny and ready for a buyer. When it was possible to tell what color a machine had been originally, it was painted that color. "If there was no evidence," Robert M. Vogel, exhibit curator, explains,

"we used what would have been appropriate for a machine of the era—or for an exhibition machine."

Items at the Centennial frequently were displayed in elaborate settings, and to re-create them exactly was often not practical. It was estimated, for example, that it would cost more than $20,000 to reproduce a showcase in which a hardware manufacturer displayed his wares at Philadelphia, because the cheap, off-the-shelf plumbing items he used to build the showcase are museum pieces today; consequently, an approximation of the showcase was planned, which would use items already in the Smithsonian's collections. Great care was taken in adapting such approximations. Thousands of photographs of the Centennial Exposition were examined; paint charts of the period were consulted in order to choose appropriate colors and color combinations; Victorian molding knives were examined to determine appropriate shapes.

The Philadelphia exhibition had its beginnings at the Smithsonian. When John Campbell, an Indiana college professor, was speaking at the Institution in 1864, it occurred to him that the nation's Centennial should be celebrated by an international exhibition in Philadelphia. The idea was such a natural one that others soon began proposing it independently. Still, it was not until 1871 that the federal government endorsed the idea, and not until the Centennial year itself did Congress vote an appropriation for it.

Meanwhile a group had come together that was willing to proceed full speed ahead with plans for the exhibition, even though it was not certain there would be enough money to pay for it. On July 4, 1874, there was groundbreaking in Fairmount Park. Twenty-two months later, 249 buildings had been erected; 153 acres of lawn and flowers had been put in.

The Centennial organizers quickly showed their ability to recognize new talent. H.J. Schwarzmann, 27-

Present version of Machinery Hall is crammed with Otis elevator and its engine, huge flywheels of steam engines and belt-driven machine tools.

Baldwin Locomotive of the Santa Cruz Railroad heads toward rotunda of Arts and Industries. Three small niches in far wall suggest a clerestory.

Engines of 1876 were built with brawn, used with pride, and endowed with personality. Mighty green flywheel has decorated spokes.

Governor, with spheres to hold speed in check, is driven by belt from engine it regulates. Exhibit's machines run on compressed air.

In Philadelphia, exhibitors advertised their products. "1876" painters recapture spirit, sometimes using names of Smithsonian personnel.

Smithsonian staffer, dressed as an 1876 laborer for film about Centennial, rests in cab of the Santa Cruz locomotive. It ran in California.

year-old Bavarian immigrant chosen to be chief engineer, drew up a plan of the Exposition grounds, supervised the activity in Fairmount Park, and also designed two of the Exposition's main buildings.

When the Exposition opened May 10, 1876, it was to an enormously enthusiastic crowd. More than 100,000 people crowded into the space between Main Building and Memorial Hall, perhaps not really the largest assembly ever to gather on the North American continent, as a *New York Herald* reporter claimed, but seemingly so as the crowd jostled good-naturedly, applauded and hurrahed for generals, politicians and foreign dignitaries. When the speeches and prayers were over and the American flag was run up into the noon sunshine, the cheers drowned out the 800-voice choir singing Handel's *Hallelujah* chorus. Umbrellas and hats flew into the air, a 100-gun salute was fired, and the Centennial Exposition had begun.

Records indicate not only how many people entered hourly at each of the 106 gates, but also how many children got lost (504), how many telegrams were sent and received (151,428), and how many arrests were made (for larceny, 160; for fornication and bastardy, 1).

A German official described the grounds as "a wonderful panorama, a whole small world in festive decor. . . ." The exhibits themselves, he wrote, "harmonize with the principal halls like the movements of a mighty fugue. . . ."

It might have been otherwise. Scarcely a decade had passed since a bitter and bloody civil war; scarcely a day passed when one did not hear of corruption in the Grant administration or of the depression that had begun in 1873. But at the Centennial the only hint that all was not as usual with the country was at the Women's Pavilion, which illustrated the American woman's increasing desire for recognition.

It was a time to praise the present rather than a time to look back, and Americans had, in fact, very little practice in looking backward. Only occasionally at the Exposition did one come across mementos of the past.

Film shows Smithsonian exhibit being set up in Government Hall, with stuffed birds, animals and fish to indicate nation's natural resources.

In Machinery Hall, near the modern printing machines, stood Benjamin Franklin's press. In the Government Building, the Declaration of Independence and a few relics of George Washington were displayed.

The Government Building also housed the Smithsonian Institution's exhibits of Indian artifacts and stuffed animals. Spencer Baird, the Smithsonian assistant secretary who headed the Institution's efforts at the Centennial, was, according to one report, committing the Smithsonian to taking charge of a wide variety of articles forwarded to the Exposition.

Joseph Henry, the Smithsonian's first Secretary and Baird's superior, had tried during his tenure to keep the Smithsonian's energies focused on research. He opposed spending limited funds on a museum. But Baird, much as he admired and respected Henry, negotiated for an entire trainload of objects from Philadelphia to add to the Smithsonian's collections. Though there was simply no room in the castle, then the Smithsonian's only building, to store or display the Centennial objects, Baird arranged to get them.

Perhaps the lineup of boxcars packed with Centennial items convinced Congress of the necessity for a new Smithsonian building. In 1879 a bill was enacted for a National Museum Building, and in April of that year ground was broken for the structure we know today as the Arts and Industries Building. It was designed by architect Adolph Cluss to be one of the innovative museum buildings in the country. It cost less than three dollars a square foot—even then Washington's most cheaply built government structure.

Its symmetrical cruciform plan, superimposing a Greek cross on a square, meant that construction elements could be ordered or cut in groups of four or eight instead of singly. The building was left open to the roof framing for the sake of economy, and had no basement. That last economy seems to have been expensive in another way. In the building's first nine years, ten Smithsonian employees are reported to have died of influenza. A Congressional investigation ap-

Scene from film shows laborers at Philadelphia Exposition putting on finishing touches before the opening. Actors are mountaineers.

A lady's toilet set of the 1870s contained everything needed by one who had everything.

Metropolitan Museum of Art, gift of Mrs. Amos L. Beaty, 1961

This Regua volley gun was designed for the defense of narrow areas.

parently concluded that damp floors were to blame, and so the original wooden floors were gradually replaced with marble tiles.

The building's opening in 1881 was memorable, for newly elected President James Garfield, a former Smithsonian regent, had his inaugural ball there, and it was declared by the *Washington Star* to be "the largest and most brilliant ever held." In the rotunda was a huge plaster figure of America, holding an electric "torch," which was powered by a generator.

Joseph Henry had died, and Spencer Baird, the collector, had succeeded him as Secretary of the Smithsonian. Like many Victorians, he seems to have been very responsive to what Gerard Manley Hopkins called "pied beauty"; the massing together of varied and disparate objects was pleasing to him.

Ironically, when the idea of today's exhibition was conceived and the Smithsonian collections were searched for objects from the Philadelphia Exposition, only relatively few were found. James Goode, curator of the castle and the Arts and Industries Building, speculates that some of the Centennial objects may finally have been discarded, since many were items common in the 19th century. Among surviving objects were no examples of the fine furniture or impressive machines that were at Philadelphia. Those had been sold and used. Work had even been found for the monumental Corliss engine. George M. Pullman purchased it in 1880 from Corliss' Providence works, where it had been taken after the Centennial's close, and transported it to Chicago, where he built a special engine house for it. For years it powered the machines

A gold-painted eagle of cast iron is perched on the Rogers double-spindle shaper.

It is one of several multibarrel weapons in Government Hall.

"Magneto Electric Machine" was for electroplating and, secondarily, lighting. We call it a dynamo.

Pharmaceutical display includes an opium jar. In foreground is Chinese opium-smoking apparatus.

Cloisonné birds were gift from emperor of China to former Secretary of State William H. Seward in 1871.

This woodworking machine for cutting holes is known as the "grape mortiser" because of ornamental grapes cast in the iron frame.

Artist's rendering of finished Government Hall in Smithsonian shows totem poles from Philadelphia.

in his car works. Eventually, after the plant was converted to electricity, the great Corliss was dismantled in 1911 and sold for junk.

Much of what the Smithsonian received from the Centennial related to natural history. ("In those carloads," observed a woman who searched the collections for Centennial objects, "were principally a lot of rocks, a lot of fish, wood, grasses and food in various forms.") A notable exception is a large colored-tile panel which is displayed prominently in "1876." It shows a male figure rising up from a volcano and, from its inscription, intended to represent nature's being brought into the service of Progress. The Haviland Company displayed it at Philadelphia and then gave it to the Smithsonian. Put on display in the National Museum when it opened, it has remained there throughout the building's various transformations.

Other Centennial objects have been lent to the Institution for "1876: A Centennial Exhibition." The huge model of the *Antietam,* a post-Civil War sloop-of-war, comes from the Naval Academy, where for many

years after the Philadelphia Exposition it was used to instruct midshipmen.

Altogether some 15 percent of the items on display in "1876" are actually from the Centennial Exposition. The rest, for the most part, are of the period, and they have been chosen because they capture its inventive spirit so well. In the furniture display, for example, is a child's swing that converts into a rocking chair and a sideboard out of which a bed unfolds.

Of all the many kinds of items displayed in "1876" it is perhaps the machines that have the greatest impact. Many of them are rich with history. The steam engine of the tall Otis elevator exhibit once powered the ballroom elevator of the Grand Union Hotel in Saratoga, one of the Gilded Age's poshest watering spots. Elisha Graves Otis once demonstrated his ratchet safety mechanism for elevators like this by cutting the hoisting rope while he himself was on the platform. But besides reminding us of such colorful historical details, the machines also convey dramatically the mood of Centennial America.

Highly polished prisms, the heavy components of lighthouse lens, magnify beam of oil lamp as Government Hall's light rotates by clockwork.

Philadelphia Exposition, reported in fact and fiction

William Dean Howells, a young editor at Atlantic Monthly, *spent a week at the great celebration in Philadelphia soon after its opening. Some of his impressions, reprinted from his magazine's July 1876 issue, appear below.*

Of [our] first impression the majesty of the great Corliss engine, which drives the infinitely varied machinery, remains most distinct. After that is the sense of too many sewing-machines. The Corliss engine does not lend itself to description; its personal acquaintance must be sought by those who would understand its vast and almost silent grandeur. It rises loftily in the centre of the huge structure, an athlete of steel and iron with not a superfluous ounce of metal on it; the mighty walking-beams plunge their pistons downward, the enormous fly-wheel revolves with a hoarded power that makes all tremble, the hundred life-like details do their office with unerring intelligence.

In the midst of this ineffably strong mechanism is a chair where the engineer sits reading his newspaper, as in a peaceful bower. Now and then he lays down his paper and clambers up one of the stairways that cover the framework, and touches some irritated spot on the giant's body with a drop of oil, and goes down again and takes up his newspaper; he is like some potent enchanter there, and this prodigious Afreet is his slave who could crush him past all semblance of humanity with his lightest touch. . . .

All that Great Britain and Germany have sent is insignificant in amount when compared with our own contributions; the superior elegance, aptness, and ingenuity of our machinery is observable at a glance. Yes, it is still in these things of iron and steel that the national genius most freely speaks; by and by the inspired marbles, the breathing canvases, the great literature; for the present America is voluble in the strong metals and their infinite uses. I have hinted already that I think she talks too much in sewing-machines, but I dare say that each of these patents has its reason for being, and that the world would go mostly unclad without it.

In his best-selling new novel, 1876 *(Random House), Gore Vidal describes the original Exposition through the eyes of his hero, who is covering the opening for a New York paper. We pick up his narrative.*

Meanwhile, a hundred-cannon salute was being fired. Led by the presidential party, we moved on to Machinery Hall, which proved to be nearly as large as the Main Building. At the center of the hall is something very large called the Corliss engine. I have not yet found out what this machine is supposed to do (mercifully, the directors of the fair are providing us journalists with elaborate descriptions of the various exhibits), but I must say that the size of this double engine is most impressive; it is about six times the height of a man, made of some dark gleaming metal.

On a platform at the base of the machine General Grant moved into the place of honour, the Brazilian Empress on his arm; he was followed by Mrs. Grant on the arm of the Brazilian Emperor. Mrs. Grant looked very grim. General Grant's expression was, as usual, puzzled and withdrawn.

Rather dementedly, and certainly tactlessly, the Brazilian Emperor kept waving his hat in the air rather more times than was entirely necessary, emphasizing the uncomfortable fact that the crowd was deliberately cheering him and not the President.

At a signal from an official of the fair, the President and the Empress moved toward a . . . what? a small mechanical something. The President turned politely to the Empress, said something to her, and she, very firmly, pushed a valve. The huge engine began to pump away most impressively, if to no immediate or practical purpose that I could see. This was the occasion for more cheers, more waves of the Emperor's hat, more scowls from Mrs. Grant.

Then, like the sea receding from some mechanical or "automated" (new word) shore, we distinguished guests left the building and our distinctions behind in order to join the humble thousands. . . .

Vidal's protagonist apparently didn't know that the Corliss engine, focal point of Machinery Hall in Philadelphia Exposition, provided power for other exhibits. The monster was eventually broken up and sold for junk. Here President Grant and Emperor Dom Pedro turn cranks (center) to start the engine.

A fish at center is drawn to a raft of the water lily *Nymphaea tetragona* in the Tokyo Botanical Garden. Japanese eat the seeds of this plant; every part of the water lily is eaten in some area of the world.

By Edward S. Ayensu

The water lily: it delights senses the world over

Throughout history men have admired its beauty; we eat flowers, pads and seeds and shouldn't let ourselves be its enemy

The water lilies that beautify our ponds and lakes a good part of every year are among nature's most magnificent creations. They exhibit a seemingly endless variety in structure and color. Throughout human history these marvelous water plants have occupied a special niche in the hearts of flower lovers. Actually, they are not true lilies at all; before the latter became established as a distinct family in the botanical literature, the word "lily" was used to describe any particularly lovely flower.

Perhaps the foremost aquatic plant of the world is the Royal Water Lily (*Victoria amazonica*, originally called *Victoria regia*; pp. 52-53). John Lindley, taxonomist at the Royal Botanic Gardens in the London suburb of Kew, named it in honor of Queen Victoria. This magnificent plant was first encountered in 1801 by a Bohemian botanist, mineralogist and doctor, Thaddaeus Haenke, on an expedition to Peru. The leaves have been described as resembling huge pie plates measuring up to seven feet in diameter, with their edges curled upward about four inches. The leaves are sturdy enough to support Indian babies while their parents are canoeing to gather the seeds.

In 1846 some seeds of the *Victoria* were taken from Bolivia to England by Thomas Bridges. Although the seeds germinated, the season was too far

Ayensu is chairman of the botany department of the Smithsonian Museum of Natural History. Sandved produces biological motion pictures for it.

Photographs by Kjell B. Sandved and Edward S. Ayensu

advanced for the plants to get established before winter, and the seedlings died in December of that year. Two years later, however, seeds were sent to Kew from British Guiana in bottles of water. This time the seeds germinated successfully, and, as Kew tradition calls for, the seedlings were distributed to other gardens.

The first Royal Water Lilies grown from seeds in this country were in the garden of Caleb Cape at Springbrook near Philadelphia in 1851. But it was the Longwood Gardens near Kennett Square, Pennsylvania, that developed the spectacular "Longwood Hybrid" by crossbreeding *Victoria amazonica* with the closely related *Victoria cruziana.*

It is not only in Great Britain and the United States that water lilies have captured the imagination of

Lotus garden at the Summer Palace near Peking—
the same flower is found carved on cave ceilings.

This is one of several species that grow in Ghana;
it has not become a problem in man-made lakes there.

A delicate species of *Nymphaea* found in New Guinea.
Many familiar water lilies originated in exotic places.

The pads of the Royal Water Lily can grow to be
seven feet across, strong enough to support a baby.

botanists and the sophisticated public. Frances Perry noted in her book *Flowers of the World* that "Water lilies [*Nymphaea*] hold pride of place among aquatic plants and have an interesting historical background. They were well known to primitive man who, groping for signs and portents of the Deity, saw in their bloom living symbols of regeneration and purification. Their manner of rising with the return of the rains, pure and undefiled from the mud . . . of dried-up watercourses suggested immortality, purity and resurrection."

The ancient Egyptians were fond of this group of plants. The walls and columns of classical Egyptian temples are frequently ornamented with drawings and sculptures of the lotus (a branch of the water-lily family). Petals of both the white and blue lotus *(Nymphaea lotus* and *Nymphaea caerulea)* were found in the funeral wreaths of Ramses II and Amenhotep I.

While on a recent visit to the People's Republic of China, I became aware of the significance of the Sacred Lotus, *Nelumbo nucifera.* As one enters the 250-acre grounds of the Forbidden City in Peking through the Gate of Heavenly Peace, the full extent of the old imperial palace with its great Halls of Supreme Harmony and Preserving Harmony can be seen. Through the Gate of Resplendent Purity are situated the private apartments, including those that formerly housed the concubines of the emperors. I observed on some of the walls of these private apartments exquisite medallions depicting the Sacred Lotus (p. 54). One of these medallions was on the wall facing the main door of the

Water lilies can be rooted in a pot so they can be moved at will—indoors in winter, for example.

A water lily from South America, where seeds of most species, called water maize, are ground into flour.

The flower of the water lily *Nymphaea rubra,* which grows in Java. For another view, turn the page.

A closer view of Royal Water Lily, named *Victoria amazonica* in honor of Queen Victoria.

The splendor of water lilies

Hall of Mind Nurture, which was the Emperor's library. Living plants of the Sacred Lotus are abundant in the three artificial lakes within the walls of the Forbidden City. In the Summer Palace seven miles northwest of Peking, I also observed in full splendor an equally impressive spread of the Sacred Lotus in one of the artificial ponds created for an empress.

Man's admiration for the water lily is not confined to esthetics. Every portion of the plant is edible. In China I had the opportunity to taste some meat wrapped in fresh lotus leaves and steamed. The fragrance of the meat was simply exquisite. In addition to the leaves, the tuber is eaten either raw or cooked.

In South America the Royal Water Lily is known as "Mayz de l'Eau" (water maize) because the edible seed, which is about the size of a pea, is made into a starchy flour for the preparation of a delectable pastry. The ancient Egyptians made flour from the seeds of *Nymphaea lotus* and mixed the flour with milk or water to make bread. Similarly, the Hausa of northern Nigeria use the seeds of *Nymphaea lotus* and other water lilies in their diet because they contain starch, oil and proteins. The food value of the seed is said to be equivalent to that of many cereals. The tubers of *Nymphaea lotus* are also cooked and eaten in India, China and the Philippines. The Australian aborigines prepared meals from both the fruit and seeds of *Nymphaea gigantea*; mothers often chewed the seeds before giving them to their children. The seeds of *Nymphaea tetragona* are eaten in Japan, and in India and Sri Lanka the rhizome of *Nymphaea stellata* is often used as a famine food.

One of the former chairmen of the botany department at Smithsonian, Fred V. Coville, included in the Institution's Annual Report of 1902 an account of *Nuphar polysepala* (cow lily) as a food item in the diet of the Klamath Indians of Oregon.

What has contributed to the popularity of water lilies is their ease of hybridization. The hybrids of tropical water lilies display an incredible array of endless colors and distinctive physical characteristics. Tracing the lineage of certain hybrids has become a challenge to horticulturists.

In addition to their color, water lilies are also endowed with breathtaking fragrances. This is particularly true of the tropical plants that bloom during the day, including the *Nymphaea odorata*. Somehow the night-blooming water lilies are practically scentless, except for the Royal Water Lily and the Sacred Lotus.

With the construction of major dams in some tropical and subtropical countries, the fear of these water bodies being covered with floating plants, including water lilies and water hyacinths, has been very real. The lake behind the Kariba Dam in central Africa, completed in 1959, was quickly invaded and covered by aquatic plants. But in Ghana, where the Volta River was dammed to form one of the largest man-made lakes in the world, the invasion of these plants has so far been minimal.

Man is not yet the major enemy of the lilies. The natural predators of water lilies in the United States, such as the muskrat that feeds on the rhizomes during winter, the sunfish that feed on the snails that feed on the algae that plague the plants, and the snapping turtle that consumes the young leaves and flower buds at night, are the major destroyers of these plants.

It will be most unfortunate if water lilies are allowed to become enemies of mankind because of their potential danger in clogging lakes and waterways.

This lotus medallion decorates the wall of a former concubine apartment in Peking's Forbidden City.

View of *Nymphaea rubra* in Java's Bogor Botanical Garden typifies the beauty of these aquatic plants.

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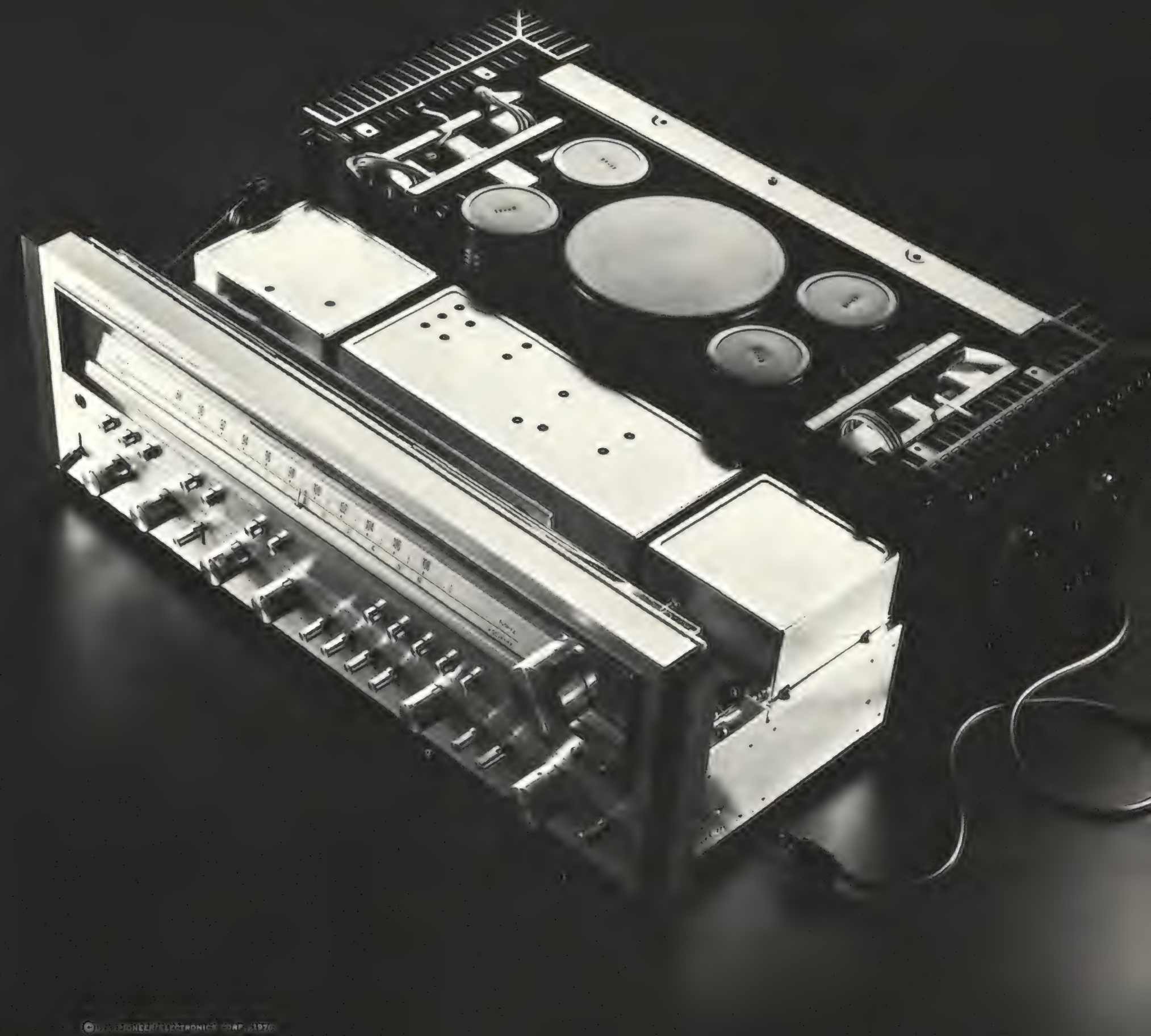
TOTAL HARMONIC DISTORTION	0.1%	0.15%	0.1%	0.2%
PHONO OVER-LOAD LEVEL	500 mV	100 mV	210 mV	200 mV
INPUT: PHONO/AUX/MIC	2/1/2	1/1/no	2/1/mixing	1/1/mixing
TAPE MON/DUPL	2/yes	2/yes	2/yes	2/yes
TONE	Twin Tone: Bass-Bass-Treble-Treble	Bass-Mid-Treble	Bass-Mid-Treble	Bass-Mid-Treble
TONE DEFEAT	Yes	Yes	Yes	Yes
SPEAKERS	A,B,C	A,B	A,B,C	A,B,C
FM SENSITIVITY (IHF '58)	1.5 μV	1.8 μV	1.7 μV	1.7 μV
SELECTIVITY	90 dB	80 dB	80 dB	85 dB
CAPTURE RATIO	1.0 dB	1.25 dB	1.3 dB	1.5 dB



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Headstands were a part of barnstorming flyers' repertoire in the Twenties. This picture, obtained from E. G. Bahl, his first barnstorming partner, may or may not show Lindbergh. Leon Klink says it was the kind of thing "Slim," a wing-walker, might have done, but he isn't sure about the picture.

A passing sailor used Klink's camera to take this snapshot of Klink (left) and Lindbergh, the latter in his trademark stance, posing in front of a Navy flying boat on an Atlantic beach.

By Jack Keasler

Tracking the 'lost' barnstorming pal of 'Slim' Lindbergh

Leon Klink, at 79, remembers sharing carefree life of an itinerant aviator before Lindbergh flew to Paris and fame

The world remembers Charles Augustus Lindbergh as a cool precision pilot who—50 years ago next May—flew solo from Roosevelt Field to Paris and hit Le Bourget airport right on the button. It does not remember him as a harum-scarum barnstorming boy aviator who cavorted on airplane wings and who had a penchant for cracking up practically everything he flew in the mid-1920s. (And when his survival possibly earned him the nickname "Lucky Lindy.") And it certainly does not remember at all the name of Leon Klink, one of Lindy's flying partners in the days before the aluminum-cowled *Spirit of St. Louis* skimmed across the Atlantic at nearly 110 miles per hour.

Yet there was something about this Klink that excited my interest a year or so ago when I reread *We*, the book that was rushed into print two months after that first, nonstop ocean crossing of 1927. The man was a young Midwest automobile dealer. He had bought a Curtiss JN4-Canadian biplane, commonly known as a Canuck, for $750, and Lindbergh was to give him instruction. They had in mind a pleasure trip through the South, then decided to go on to the Pacific Coast and back, "barnstorming only enough," Lindbergh wrote, "to make current expenses if possible."

Barnstorming meant taking locals aloft for brief flights over their villages, for $5 each. Klink needed the experience; Lindy was just passing the time while

waiting to hear whether he had passed the exams to enter Brooks Field at San Antonio as a flying cadet. Both needed the money.

Time ran out, thanks to various crashes. "It was too near the 15th of March to continue west," Lindbergh wrote, "so we decided to take the Canuck back to San Antonio where we would finish off the repairs and Klink would continue on to California alone."

So far as *We* were, or was, concerned, that was the end of Leon Klink. Did he, a novice pilot, ever get to California? And get back? And whatever happened to him, if not sudden death, while all those things were happening to Lindbergh? Once I got curious about the man and his fate, it became an obsession. I began to try to track him and his story down. Whatever I discovered, I felt, might add a new dimension to Lindbergh as a person. Ultimately the quest was successful—Klink was alive and well, then 78, minding his own business, right in his own backyard, which was St. Louis—but along the way to him I often felt like a frustrated Mr. Keane, tracer of lost persons.

The closing words of Chapter Four in *We* indicated that Klink took off alone in his Canuck for California from Stinson Field, San Antonio, in mid-March 1924. So I began my search for Klink at Stinson. No one recalled ever hearing of Lindbergh's being there with Klink and his Canuck. No records were kept in 1924; in fact, neither aviators nor airplanes were required to be registered or licensed back then.

The Canuck was the Canadian version of the Curtiss JN3 "Jenny" World War I trainer. For some reason the design included a leak-prone water pump above the carburetor air intake. Flyers joked about the water pump and the Curtiss OX-5 engine being two of the "108 reasons why a Canuck will set you down anywhere, anytime, without warning."

What happened to Klink on his first day out from Stinson? By phone I talked with people as far west as Del Rio, some 170 miles from San Antonio on the Southern Pacific railroad—the S.P. track then being the "iron compass" that aviators could follow to and from the West. Nobody remembered Klink. Some old-timers recalled Cal Rodgers passing through in 1911, to be the first aviator to fly coast-to-coast. (His "Vin Fiz" is in the Smithsonian's new National Air and Space Museum, where the *Spirit of St. Louis* also will be on display starting July 4).

Had a leaking water pump or other engine malfunction set Klink down in an isolated canyon or mesquite thicket? A story goes that hunters once parked their car in a thicket where it was lost for 17 years. The same thing could happen to a plane.

The Texas Rangers are famous for finding people—not all of them like Sam Bass, the bank robber, or Bonnie and Clyde—but also decent folks who need to be located. I wrote to ask if their records could shed any light on Klink.

While awaiting a reply from the Texas Rangers, I scanned 1924 newspapers, with little luck. There was a brief story about four U.S. Army planes leaving California to attempt a flight around the world. But there was also this news item in a February 12, 1924, St. Louis paper:

KLINK MAKING
CROSS-COUNTRY
AIRPLANE FLIGHT

Leon A. Klink, automobile dealer at 3435 Juniata Street, is dodging the cold weather in this section by making a flying trip to Florida, California and other warm sections of the country.

Klink recently purchased an airplane, and with an instructor departed for a flying trip, headed

Lindbergh taken by Klink at Camp Wood, where a hotel sheet patched up Canuck's wing fabric.

south. . . . He states that he will go from Florida to California . . . before returning to St. Louis.

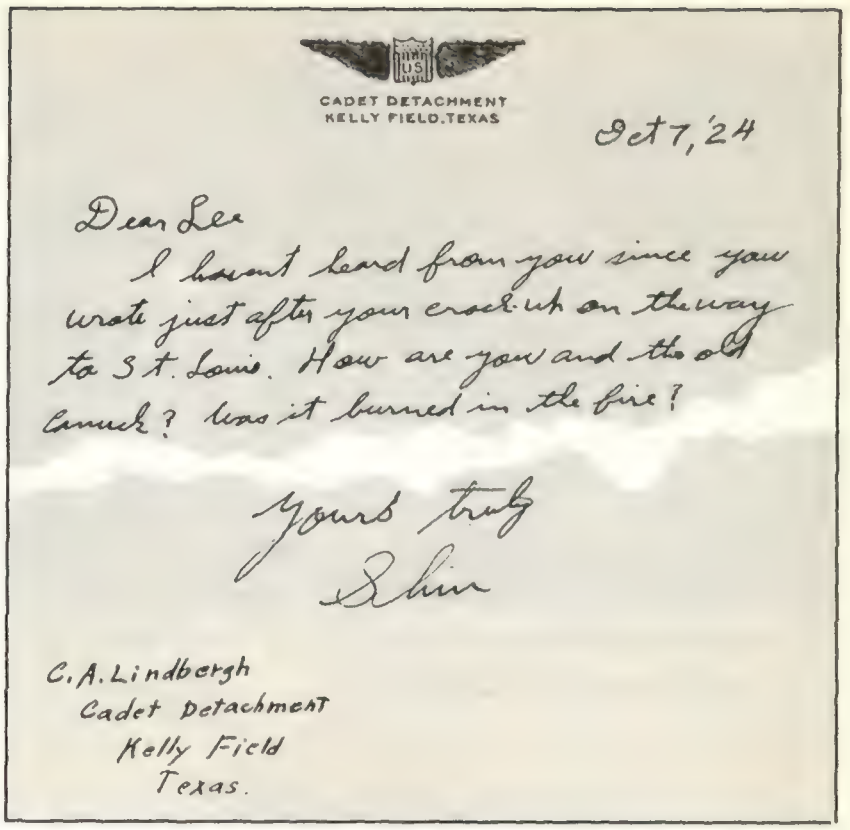
The "instructor" was Lindbergh. He was less known then in St. Louis than the 27-year-old Klink, a dynamic, successful used-car dealer. The omission of Lindbergh's name was not Klink's doing. He had mailed the paper a penny postal from Pensacola and the paper wrote the story.

The Texas Rangers responded promptly. "We regret we are unable to find records of a plane crash in 1924 involving Klink."

I recalled that Arizona Senator Barry Goldwater had been flying since 1929. I wrote to him, and asked him if he knew aviation people who might give me a lead on Klink. Senator Goldwater wrote that he was putting me in touch with a pilot who was an excellent historian, and that this pilot knew another pilot's widow who remembered "everything almost back to the Wright brothers."

Soon I had a letter from Mrs. Ruth Reinhold of Phoenix, a member of the transportation board of the Arizona Department of Transportation. Once she had helped Barry Goldwater. He had built up about 200 hours of flying time but had allowed his private license to expire. In 1939 Mrs. Reinhold, then a flight instructor, gave him a refresher course for a commercial license. She also taught his brother Bob and his sister and sister-in-law to fly. Mrs. Reinhold was Goldwater's pilot for several years, starting in 1962. Now she wrote me: "Klink has me bugged. We'll find him!"

A faint clue turned up. Mrs. Lola Mayse of Phoenix, widow of a part-Cherokee Indian pilot who in 31 years of flying piled up a total of about 24,000 hours of flying without injury to himself or a passenger, has been


CADET DETACHMENT
KELLY FIELD, TEXAS

Oct 7, '24

Dear Lee

I haven't heard from you since you wrote just after your crack-up on the way to St. Louis. How are you and the old Canuck? Was it burned in the fire?

Yours truly
Lindy

C. A. Lindbergh
Cadet Detachment
Kelly Field
Texas.

Klink has kept letters from Lindbergh, like this note from Kelly Field, where the fledgling cadet was transferred six months after his enlistment.

Klink snapped by Lindbergh, on a barnstorming stop the pair made at Friar Point, Mississippi.

An unimpressed personnel man at Brooks Field didn't manage to spell the name correctly or even to get the correct initials.

The Canuck bashed in the side of hardware store in Camp Wood when Slim, taking off in a street, failed to miss a utility pole.

The "iron compass" of the S.P. tracks, crossing the Pecos River.

a friend of Barry Goldwater and Mrs. Reinhold for many years. When Mrs. Reinhold told Mrs. Mayse about the search for Klink, Mrs. Mayse said, "It seems I remember my husband talking about Klink. The name Klink rings bells. Let me think about it."

Mrs. Mayse, who had been a pretty young schoolteacher at Safford, and had married a smiling, thin-as-a-rail barnstorming aviator named Charles W. Mayse, who flew in from El Paso in 1922, was the first of all the people I talked with who seemed to remember Klink.

Through various state governors I requested a search of vital statistics records, offering to pay if need be. The responses were prompt; there was immediate action in the search for Klink.

So now, figuratively speaking, I had riding with me, in the search for Klink, what someone termed "The Lost Aviator Posse." They included Governors Raul Castro of Arizona, Edmund G. Brown jr. of California, Jerry Apodaca of New Mexico, Christopher S. Bond of Missouri (Klink's home state) and Dolph Briscoe of Texas, plus Senator Goldwater, various state police departments, museums, historical societies, retired old-time aviators and others.

Lindbergh called Klink "Lee," and Klink, like others, called Lindbergh "Slim." They set out from St. Louis in January 1924, to barnstorm the South in Klink's Canuck, and their trail from Missouri to Florida is easy to follow. In Kentucky, Tennessee and Mississippi are elderly people who once paid $5 for a short hop, with Lindbergh at the controls.

From Florida to Texas the trail left by Slim and Lee is a wake of shattered propellers, ripped and torn fabric, broken wing spars, caved-in wheels and splintered landing-gear struts. They reached San Antonio in February 1924, a month ahead of Lindbergh's induction date into the U.S. Air Service. They decided to fly on to California in Klink's Canuck, using that "iron compass" of the 1,434-mile Southern Pacific tracks from the Alamo City to the West Coast. When Klink had asked his buddy, "Do you think we can get across the mountains?" Lindbergh had said, "It won't do any harm to try. The mountains are lowest in the south, and we can hit the passes."

It should be noted that Canucks (and all Jennies) spoke a language that mesmerized pilots. Canuck "talk" was a combination of sounds: the OX-5 engine rumbling, clattering and popping as it turned at about 1,250 rpm cruise speed, the beat of the propeller flailing the air, the shrill singing of the wind in the some 250 feet of exposed wire rigging, and the assorted vibrations and rhythmic rattles of the airplane.

When they set out to follow the S.P. rails west, Slim may have been listening to the Canuck "talking," because he didn't pay attention to time in the air, mistook the Nueces River for the Rio Grande, and became lost. The day's flying ended with Slim landing the Canuck on a street in the small Southwest Texas town of Camp Wood.

Two days later he tried to take off down a side street, having to steer the Canuck's 43-foot,7½-inch wingspan between two telephone poles 46 feet apart. As Lindbergh recalled it in *The Spirit of St. Louis,* "I thought I was rolling precisely along the center of the street, but I failed by three inches to clear the right-hand telephone pole. I jerked the throttle shut, but it was too late. The pole held my wing, while . . . momentum carried the fuselage around and poked its nose right through the board wall of a hardware store."

A great racket ensued as pots, pans, skillets, wash-

Jack Keasler of San Antonio has worked in TV, radio and advertising. He is now a free-lance writer.

Westbound Klink saw the scene from lower down, about 1,500 feet.

After a takeoff by Lindbergh at Pensacola, the Klink Canuck flopped on a sand dune, its landing gear and propeller shattered.

tubs and pitchforks tumbled to the floor. This was followed by a delayed thump when the portrait of Cal Coolidge fell from the wall of the post office in a nearby store. Slim and Lee offered to pay for repairs, but Warren Puett, the hardware merchant, refused the offer. The advertising value, he said, was worth the cost of repairs to his store.

Slim and Lee slept in Mr. A. L. Fitzgerald's hotel. The story goes at Camp Wood that Slim told Mr. Fitzgerald he was going to swipe a bed sheet to patch holes in the Canuck, but Fitzgerald said, "For goodness' sake, Slim, steal a clean one! I don't want that airyplane flyin' around covered with a dirty sheet."

When the Canuck was repaired (it flew slightly sideways), Slim took the Fitzgeralds and others up for rides to repay them for their kindness. Then Slim and Lee again headed for California. They might have made it except for a Spanish bayonet plant the Canuck couldn't climb over on takeoff after a landing near Maxon, Texas. The plane broke a wing spar. While Lee rode a freight to El Paso to get repair parts, Slim stayed with the Canuck and lived with a rancher.

But by now they were out of time. When the wing was repaired they flew the Canuck back to San Antonio, where Lindbergh soon would become an air cadet, and where Klink would set out alone in the battered Canuck for the trip to California. That was where Klink's trail had ended.

At last, on Friday the 13th of June 1975, just 71 days after I began my search for Klink, clues unearthed by "The Lost Aviator Posse" enabled me to locate him. A letter from Pat Weiner, reference specialist for the State Historical Society of Missouri, told how she had found a Leon A. Klink in St. Louis city directories for 1922, 1925, 1928 and 1966. He was listed as a salesman, then as owner of an automobile sales company, and finally as being a retired person.

Checking birth records, I found that Klink had a son. The son gave me his father's unlisted telephone number. I dialed and a strong, clear voice said "hello."

"Hello," I said, "are you Leon Klink?"

"Yes, this is Leon Klink."

"The Klink who barnstormed with Lindbergh in 1924?" I asked.

"The same," he answered. "Who is this?"

I explained that I was a writer who, with the help of Senator Barry Goldwater, the governors of five states, the Texas Rangers and many other people, had sought to discover the fate of aviator Klink about whom Lindbergh wrote in his books.

With unaffected modesty Klink said, "I'm surprised that all these people have been concerned and have gone to the trouble to locate me. After 50 years I can't remember things as Mr. Lindbergh did in his books, but I'll do my best to tell you about him, and what happened after I took off alone for California."

I said, "You just referred to him as Mr. Lindbergh."

"Yes," Klink replied, "I was five years his senior but I have a reverence for him as a great man and I feel easier calling him Mr. Lindbergh. He stayed in aviation but I didn't and, although our interests were different, we stayed in touch. The last time I heard from him was when my wife Gladys and I observed our 47th wedding anniversary. He sent his congratulations and best wishes for our happiness and long lives."

Less than a year later, in 1974, Lindbergh's life was ended by cancer.

Gladys and Leon Klink treasure a hand-scrawled note from Lindbergh dated "Oct. 12, '26" which begins with "Dear Lee, I was very sorry to be unable to attend your wedding and wish to send you my best wishes even at this late day."

Apparently with nothing else to write about weddings, Lindbergh devoted nine of the letter's 12 lines to flying. Engine failure a couple of weeks before on an emergency trip to Wichita had set Lindbergh down on the farm of J. G. Keilholz, who, as Lindbergh wrote, "reminded me that you and I had landed in the same field with the Canuck three years ago." Lindbergh got the engine running, he wrote, "in the afternoon following." Keilholz had provided Lindbergh a bed, supper, breakfast and lunch.

A few months after being Mr. Keilholz' nonpaying guest, Lindbergh was sleeping in embassies, being honored by kings and queens, and receiving Raymond Orteig's prize of $25,000, which had been sitting in a bank since 1919, ready to be paid the first aviator to fly nonstop from New York to Paris.

A few days after my first talk with Klink, he sent me a penciled note in a firm, steady hand, recalling the events of a half century ago.

"The plane was flown [after the collision with the Spanish bayonet at Maxon] to a San Antonio air field for final repairs and I left Mr. Lindbergh and kept going west until I came to Calif. a week or 2 later. When I finally got to California I knew I would need a car if I would see what I wanted to so I bought a car [instead of using the Canuck], an old Model T Ford Tour, which I used in Calif. and even Mexico. After over a month I decided to leave for home, so I sold the old car and started back east, and finally got to San Antonio where again I saw Lindbergh."

Klink's letter made the California-and-return solo trip sound as uneventful as a crosstown bus ride.

I phoned Klink again and asked if it all had been that simple. He said, "I had some accidents, but didn't get hurt. Mr. Lindbergh had showed me how to use rope, haywire, and some auto and tractor parts to fix the Canuck."

Some old-time pilots may dispute this, but I told Klink I thought he may have been the only pilot to fly an OX-5-powered Canuck west over the Continental Divide, and surely the only one to make a round-trip over this hazardous route in a plane designed for short training flights over low-altitude country.

"I don't know about that," Klink said. "Maybe I made it because I weighed only about 140 pounds and the Canuck was flying light with nobody in the front seat. I did what Mr. Lindbergh told me to do, to stay out of clouds, keep the Canuck's nose down and to not get caught out after dark."

The desire to fly long distances was deeply ingrained in Lindbergh, Klink said. "He had extra tanks installed on the Canuck to increase its range. He lashed cans of gas to the fuselage and leaned out in mid-air and poured gas from them into the main tank through a hose when the main tank was low.

"Once I had a can of gas in my lap in the back seat, and tanks also were lashed to the cabane struts, and all of this gas weighed so much the poor old Canuck couldn't climb over about 200 feet. I threw my can overboard so we could gain altitude. Lindbergh watched the can falling earthward and shook his head sadly when it burst on impact.

"Fooling around with gas like that was dangerous, but Lindbergh had confidence in himself. He took chances with his life, like on the flight to Paris."

Lindbergh's triumphal return to Lambert Field at St. Louis after his solo flight to Paris was described by a newspaper reporter, in part, as follows:

"How tired he looked. A tall boy, with a shock of touseled hair—a boy freshly shaved, but with the grime of travel on his face. Although the crowd shouted in frenzy for him to smile or laugh or do something, he simply stood there—a glum young man, some 6 feet 2 inches in height, whose eyes told the story of how tired he was.

" 'Smile, Slim! Smile, Slim!,' sang out a girl with a camera. Everybody laughed but Slim.

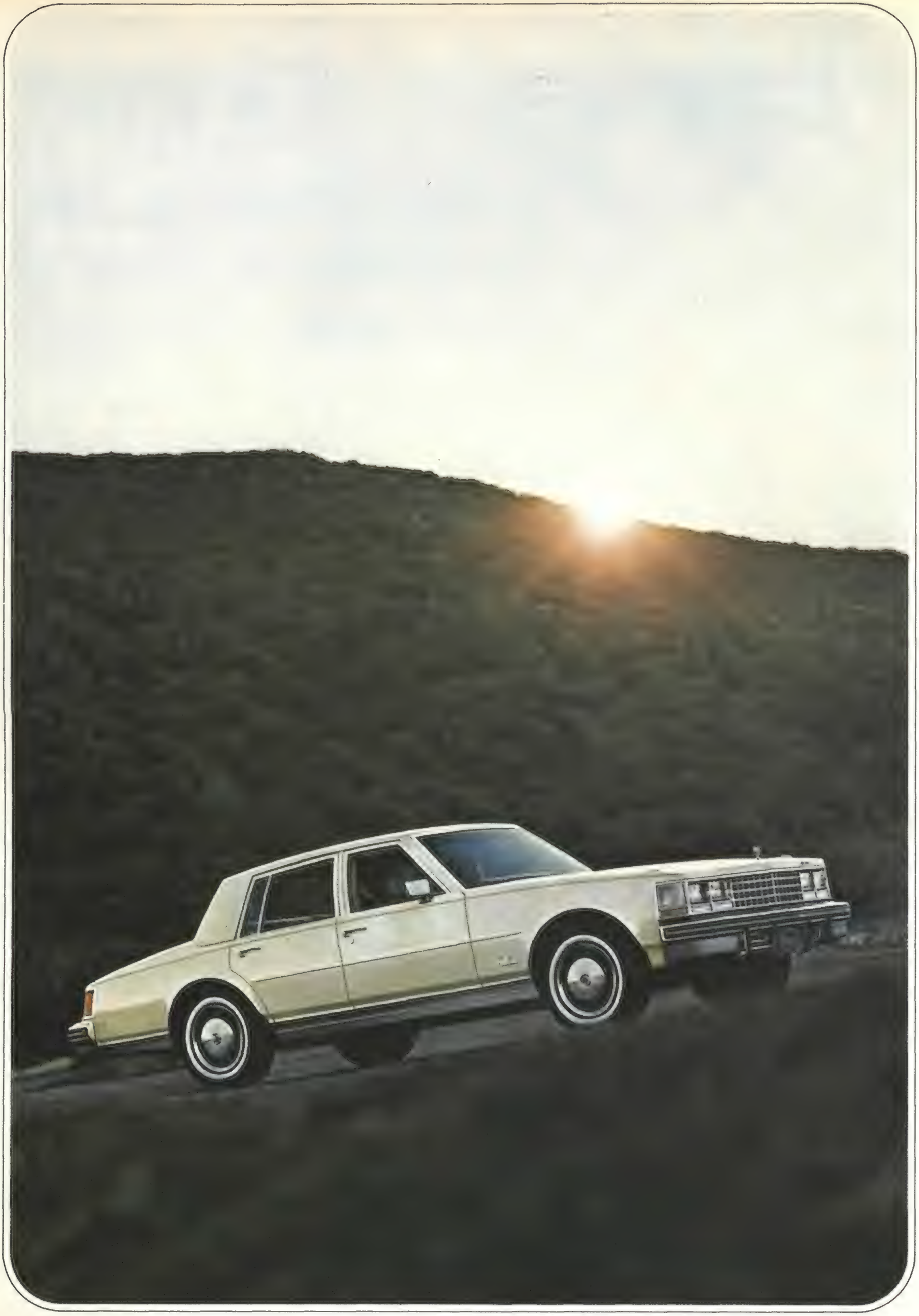
"The only show of emotion was when Leon Klink, his old flying partner, reached over the holding line and grasped his hand.

" 'Glad to see you, Slim'," said Klink.

" 'Same to you, Lee,' responded Slim."

Before either of them could say anything about the old Canuck, or talk about the days of old, a shoving mass of humanity separated Slim and Lee.

At a museum in St. Louis, today's Leon Klink stands by a painting of the *Spirit* and its pilot. Of two busts, the one at left is a plaster cast of a 1939 head by Jo Davidson.



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To help minimize squeaks and rattles, the instrument panel cover utilizes one-piece assembly—with foam on the back and air bezels molded into place.

To battle rust, side and wheelhouse moldings are formed of bimetal (stainless steel laminated to aluminum).

To help silence wind noise, super-soft weather stripping is used on doors. (Note absence of visible seams in metal portion of door.)

Seville
BY CADILLAC

By Richard D. Daugherty
with Ruth Kirk

Ancient Indian village where time stood still

Archaeologists find that 300 years ago, at Ozette on Washington's coast, an avalanche formed small Pompeii in mud

Archaeology students swarm over the Ozette site, where excavation is done not with shovels, but

A Makah Indian put this wooden spool (above) down at one time and it remained untouched again until an archaeologist retrieved it from the mud. One among thousands of artifacts preserved in the mud—ranging from

with fire and garden hoses, in order to protect the fragile artifacts unearthed from three houses.

The time was something more than 300 years ago; the place Ozette, a Makah Indian whaling village on the Olympic Peninsula in Washington state.

Rain may well have been turning the earth sodden at the time, uniting sky and sea into a single grayness. The great winter ceremonials must have been over, the masks and regalia put away for another year, and the season of garnering the resources of ocean and forest well begun. Yet during the night disaster swept through the village. A hillside gave way and entire houses were sealed beneath eight to 12 feet of wet clay. Perhaps a tremor shook the earth. Ozette is situated close to a fault zone and the steep slope behind the village consists of unstable glacial sands and clays.

Whatever the reason, a mudflow slammed into the village. Complete households were suddenly stopped in time. For six years now I have been excavating the houses buried by the rushing flow. Another three or four years will pass before the work is done. Because of unique preservation circumstances, remarkably detailed information about the life of the prehistoric whalers is available at Ozette. Humpbacks, grays, sperm whales, right whales and others migrate closer to shore at Ozette than anywhere else along the Northwest coast, as do fur seals. For thousands of years (ending only a generation ago) men have been paddling out past Ozette's protective reef and islands to hunt at sea. Hard work. Dangerous. And uncertain. But for the

household items to elaborate whaling equipment—it has two remarkably realistic faces carved on its ends (left and right). The one at left may be a woman. Like other Ozette artifacts it was plunged into preservative.

An ancient Indian village

successful, it was doubtless attended by great prestige.

Perhaps the very day of the disaster hunters had paddled home with a whale in tow and accepted the villagers' admiration as the butchering got under way on the beach. Possibly someone had carried fresh blubber—a delicacy—up to one of the houses. Certainly they did this at times, for we have found the evidence in one house: huge barnacles of a kind that infest the skins of baleen whales only.

Rolls of cedar bark, apparently fresh from the forest, had been brought into another house, which stood slightly lower on the terrace than two others we have been working on. The bark was to be split and dried for making clothing, mats, pouches, baskets and all manner of useful items. But that night the mud hit the houses. Parts of the upper ones got knocked into the lower one and the wreckage of them all was deeply buried. Most of the village escaped the tragedy—and, ironically, later houses have long since vanished, virtually without physical trace, whereas the ones sealed beneath the mudflow remain. Ozette is a Pompeii in mud instead of volcanic ash, an archaeologist's dream.

We are able to reconstruct the past from an almost complete inventory of the implements and materials needed for daily life in the one house that has been completely excavated and the two others where exposure is now well under way. In addition to these three, we know the location of at least one other buried house apparently hit by the same mudflow, and there could well be others. Geologic evidence points to repeated mudflows through the centuries.

Animal tissue is gone from the houses except for bone, a few feathers barely recognizable, one example of braided hair used on an oil dish that is carved in human form, and a trace of animal hair, probably dog. Plant fiber remains. We find the timbers of the houses and the sleeping benches (planks as much as 2½ feet wide, split from Western red cedar and adzed smooth); looms; cooking boxes and storage boxes; parts of a canoe, paddles, balers; whaling harpoons, sealing harpoons, bows and arrows fitted with wooden points instead of stone; fishhooks, net fragments, seal clubs; baskets, mats, hats. Sealed within the mud, the artifacts have been essentially free of fungal and bacterial decay, but they have been subject to chemical decay and are so fragile that, once excavated, they would disintegrate unless we placed them quickly into a preservative solution.

It must have been in June that the slide hit. Our first indication of the time of year was finding alder leaves on the floor of the first house we excavated (and we subsequently have found twinberry leaves on the floor of the second house). The leaves' presence puts the mudflow sometime between April and November, since alder is a deciduous species; they were still green as we freed them from the clay, although within minutes of exposure to the air they oxidized and turned brown. The rolls of cedar bark further narrow the probable time of the tragedy to June. Makahs today peel bark from the trees in June when rising sap eases the job, and they are quick to split, dry and store what

Unstable hills of glacial mud and sand rise above site. Archaeologists' camp is at right center.

Petroglyphs showing faces and killer whales were discovered near Ozette site, once a whaling village.

Richard Daugherty and Makah crew member, Meri Flinn, gingerly open a basket taken from House Two.

Using a fine spray of water pumped from ocean, Dr. Daugherty washes free contents of the basket.

Inside, among other artifacts, Dr. Daugherty found this delicately carved comb, used for scratching.

It is not clear if the little bone carving was meant to be in the mussel shell or if the mud pushed it there.

This wooden club was fashioned so that, in profile, it resembles the head of a seal, a favored prey at

they bring in from the forest. This suggests that what we found, still rolled within a carrying basket, had been newly gathered. If it had been stripped from the trees many days before the mudflow struck, it almost surely would have been processed further.

We haven't found any European or Yankee trade goods, and I think the houses must have been devastated shortly before such trade began. Along the Washington coast that contact began in the late 1700s. Stratigraphic profiles indicate little soil development at the surface of the mudflow before new houses were built on top of it—and in these upper houses we do find items of white manufacture. I believe the material we are excavating must belong to the 16th or 17th century.

This is far from the earliest time men began living at Ozette, however. Excavation in 1966, funded by the National Science Foundation, revealed apparently continuous occupation by sea mammal hunters for at least 2,000 years, based on radiocarbon dating, and probably for twice that long based on geologic evidence from strata older than those sampled for charcoal (used for radiocarbon dating).

From the prehistoric houses excavated so far, with funding through the National Park Service, we have recovered, catalogued, and preserved more than 21,000 artifacts, including remains of the houses themselves. In the first house alone there were 2,014 pieces of rope and cordage, 157 mats and 276 baskets. There were also parts from at least 377 separate wooden boxes in this house, most of them for cooking or storage. There were three looms, one of them inlaid with shell and what seem to be fish teeth; 26 combs of wood and bone, which Makahs tell us are of a sort used decoratively and for scratching rather than for combing the hair. Whaling harpoon shafts number 37, harpoon heads 69, killing lances 20. One of the baskets held four pouches with whaling harpoon heads of ground mussel shell blades fitted with bone barbs. The blades are wedged into position with tiny splinters of cedar, and remnants still exist of the spruce pitch used to smooth the entire surface. Amazingly, the spruce pitch has retained its pungent smell and it is still sticky despite all the centuries.

All of this has lain like a waiting time capsule. My privilege, and that of my colleagues and students from Washington State University, has been to open the deposits. In this we have worked closely with the Makah Indian Nation; in fact the current phase of the undertaking got started in response to a phone call from the Makah Tribal Council in 1970. Storm waves cutting into the bank at Ozette that winter were washing out artifacts and the council asked me to resume the excavations that had been interrupted two and a half years previously.

From the time we got under way again until the

Richard D. Daugherty is professor of anthropology at Washington State University and director of the dig at Ozette. Mrs. Kirk, a Tacoma journalist, and her husband took all but the final photograph shown here.

Ozette along with whales. But the top of the seal's nose, when viewed from above, is a man's face.

Man-shaped oil bowl has a braid of hair, one of the few examples of animal tissue other than bone at site.

present, Makahs have been directly involved in the project; ultimately they will take over its results. Several of their high school and college students have been regular members of the field crew. They also work in the laboratory located at Neah Bay, the one Makah village remaining of the five traditional ones. Tribal elders help, too. They often visit the lab to see what has come in from the site, and several times they have aided in identification of objects or helped us to understand uses better.

Twice we have arranged for the elders to be flown by the Air National Guard to the Ozette site on Cape Alava, 14 straight-line miles south of Neah Bay. "We left here by canoe," a woman in her seventies remarked on one of these occasions, referring to the forced abandonment of Ozette beginning around 1910 after the federal government required all Indian children to be in school, yet provided no schools for the Makahs except at Neah Bay. "We left by canoe, and now we return by helicopter."

Ozette never slipped from Makah consciousness, however. In the mid-19th century, when Indian reservations were being established, the Makahs' land was formally designated as surrounding Neah Bay. Ozette was not included although families continued to live there. Not until 40 years after the establishment of the main reservation were 700 acres at Ozette set aside by an executive order of President Grover Cleveland. Between the two reservations most of the land went into timber company ownership and some eventually came under National Park Service administration as part of Olympic National Park's ocean strip.

Makah families who had moved away from Ozette at first returned there in summer when the children were out of school, but gradually the custom fell off. Even so, grandparents at Neah Bay continued to sing the songs of their old home village and to tell the family legends of life there.

In reconstructing the life of the past, archaeological strategy at Ozette has differed from the usual. Excavation has meant coming up with techniques that wouldn't damage the very items we were trying to save. For example, what chance would the carving on a moisture-softened box front have against even careful scraping with a trowel? The clay of the mudflow is heavy and adhesive.

The answer has been water. We laid plastic pipes from the reef to the site. This lets us pump water from the ocean with enough volume and pressure to wash away the overburden of the mudflow. Then, once down to a house level, we switch to the fine spray of ordinary garden hoses. The system works so well that we have recovered material as incredibly fragile as the alder and twinberry leaves and as minute as shavings left by a woodworker. Problems have been minimal: during some low tides we can't get enough water for the high-pressure hoses, and in winter the lines get washed out by waves. Once we had jellyfish come spattering out the nozzles, stinging the arms of one of the excavators.

Preservation of the artifacts has posed several challenges. Little precedent exists anywhere in the world for handling the volume or range of waterlogged materials that we have. A preservation technique satisfactory with one type of wood, or of artifacts, could scarcely be guaranteed for the next. Even so, we have had high success with Carbowax (polyethylene glycol), a chemical distantly related to automobile antifreeze, which soaks into the wood and replaces water. Items thus preserved, too fragile to touch as they come from the excavation, end up safe to manipulate for study and, ultimately, to display. There are many pieces that have been out of the preservative vats for five years up until the present time, without showing any noticeable signs of deterioration.

The standard procedure calls for washing artifacts with water and getting them into preservative solution at the site lab as soon as they come from the excavation. Then they are flown to Neah Bay for final stabilization, storage and analysis. A month's soaking is enough for most pieces, although large ones need to stay in the preservative solution proportionately longer. This is also true when the wood is impregnated with oil and grease from centuries ago—for example, hardwood bowls used to hold seal or whale oil, condiments even today relished by Makah elders as an accompaniment to smoked fish. These bowls still smell oily, and evidently their wood is so saturated that Carbowax can't penetrate adequately.

New knowledge of aboriginal life along the Northwest coast has come from Ozette. We have found steel chisels and knives, hitherto unknown for this part of the coast prior to the arrival of European and American ships. Probably the steel for these blades was taken from disabled Japanese junks that drifted across the Pacific and came ashore. Several such junks are known within historic time, and the high carbon content of the Ozette steel is consistent with the composition of primitive steel known from written records to have been produced in Japan at least as early as the eighth century A.D. Another possible source of the metal, other than from junks, might be by trade down the coast from some bridge of contact between Asia and North America.

The looms we have found in the houses represent a second type of artifact previously unknown along the outer coast of the Olympic Peninsula in prehistoric times. Journals of the 18th-century mariners mention weaving by Puget Sound peoples but not by those along the ocean coast—and until the archaeological record of Ozette, the journals were the only record available. Yet we have three looms from the first house alone, and the folded remnants of a blanket which seems to have been woven of cattail fluff, probably mixed with dog wool. The blanket is woven in a plaid pattern, by far the earliest plaid known on the Northwest coast.

Another item of special interest is a whale fin carved of red cedar and inlaid with 700 sea otter teeth (opposite). Nothing comparable exists in any collection or is mentioned in any report, except for a drawing made by John Webber, the official artist on Captain James Cook's third voyage, which arrived off the Northwest coast in 1778. The drawing is of a Nootka house on Vancouver Island, north and west of Ozette. A sculptured fin rests on one of the sleeping platforms of the house in the drawing. It appears almost identical with ours. The size looks about the same and it, too, is inlaid. Such an elaborate item must have carried great significance, quite possibly playing a key role in a whaling ritual, but present-day Indians have been unable to tell us anything about it.

The whale fin and all of the artifacts from Ozette will remain in Neah Bay permanently. A new $1.5 million museum and cultural center currently is under construction there and a special program has been set up at the Burke Museum on the University of Washington campus to train Makah students as curators. Funding for the building has come through the Economic Development Administration, and the training program is through the National Endowment for the Arts. The whole undertaking, from the first excavation at Ozette in 1966 to the opening of the Makah museum scheduled for early 1977, has served to make the past a part of the present. That always is the function of archaeology, but in this case the knowledge gained also serves the heirs of the Ozette people.

A unique find was cedar whale fin, inlaid with more than 700 otter teeth. Design is a mythical bird.

Lord Cornwallis surrendered at Yorktown
to Washington, Rochambeau and the mosquito.

By Eleanor Nealon

The bugs bit what bullets bypassed in bygone battles

Whether we fought Indians, British, Spanish or Germans, common foes were typhus, yellow fever, malaria and other pestilences

The American Revolution may have been won at Yorktown because General Cornwallis and his men rode through tidewater marshes in Virginia, swatting mosquitoes. Following a campaign through the Carolinas, Cornwallis had retreated into Virginia. He set up fortifications at Yorktown with about 8,000 prime troops, knowing that British reinforcements from New York were on the way. Meanwhile, Admiral de Grasse blockaded Chesapeake Bay. A month later, in September, Washington, aided by French troops under Rochambeau, broke through Cornwallis' outer defenses. They faced Cornwallis with a combined force of nearly 15,000 regular troops. On October 19, 1781, Cornwallis surrendered.

In retrospect, some questions arise concerning this victory. Although outnumbered at the moment, Cornwallis was the best British field general in the Colonies; his troops were hardy British and German professionals behind fortifications; they knew Sir Henry Clinton was en route with 25 ships and ten frigates carrying top British regiments. Yet Cornwallis surrendered without a prolonged siege and lost a war. Why?

When the Americans and French gathered up their prisoners, they discovered that in addition to the wounded, 2,000 more of Cornwallis' men were ill. Thus one-fourth of his army was ineffective. The weather had been warm and Cornwallis himself had grumbled that Yorktown was a post "which only gives us some acres of unhealthy swamp." Dr. Howard M. Simpson, writing in the *New England Journal of Medicine,* says that the culprit disease probably was malaria, conveniently carried by mosquitoes which loved such marshy breeding ground. Without this and other devastating illnesses, American history might read quite differently.

A sidelong glance at our country's successful revolution, says Dr. Thomas C. Lee of Georgetown University Medical School, reveals "that it often was the disease of the losing side that tipped the scales." Dr. Lee's remarks prompted me to look further at the influence of disease on the foundation and course of American history. Beginning with Columbus, we see

By World War I, vaccination had checked old army diseases, but an influenza epidemic raged.

Drawings by Arnold Roth

Scurvy, smallpox and other dread diseases crippled many explorers, including Columbus,

that he must have had his share of problems simply arriving, not conquering. Dr. Louis H. Roddis in *A Short History of Nautical Medicine* noted that "with the advent of long sea voyages, the demands for measures for the prevention and treatment of the great sea scourges—scurvy, typhus fever, smallpox and similar diseases—became urgent, as did the problems of crowding, air supply, water supply, food, and the care of the sick and injured under shipboard conditions."

Columbus' discovery of the island of Hispaniola provides an inkling of things to come in the New World. That island had approximately 300,000 natives when Columbus arrived. Fifty years later they had been almost wiped out. In 1548 Oviedo, Spanish chronicler on America, wrote that they had "so many diseases, especially certain pestilential small-pox which prevails generally in all the island, that in a short time the Indians will be ended."

This pattern would spread across the New World as men and women from Europe brought diseases like smallpox, measles, and perhaps typhus to the native Indians who had had no previous contact and thus no natural or acquired immunity to them. Handfuls of settlers far from home with tenuous supplies could survive and eventually control tribes of proud Indian warriors because they infected them.

As colonists came, inroads of epidemic disease cut into the native population and can be traced wherever the Spanish, French and English settled. In 1519 Cortés began subduing the Aztecs, who were sufficiently advanced to have an ominous-sounding word, *camapotoniliztli,* for halitosis and mouthwashes made from certain plants to cope with it. In any case, with 500 men, 11 ships, 32 crossbowmen, 13 musketeers and 16 horses, Cortés confronted these civilized people and conquered a kingdom. De Herrera, a writer for Cortés, commented: "There used to be a great number of Indians, but by reason of many diseases, and pestilences which they usually have in the province, they diminished greatly, because being sick with measles, small-pox, catarrhs, bloody flux and great fevers they bathe in the rivers without waiting for the diseases to subside, and so they die."

French priests in Canada were distraught at similar decimation of natives. *Jesuit Relations* noted: "Hardly had they heard of the Doctrine that we preach to them, and commenced to receive this divine seed, when a contagious disease (smallpox) spread through-

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for bad food, bad water and overcrowding belowdecks left sailors too weak to resist.

out these nations, carrying off the healthiest of them."

Colonel P. M. Ashburn in his book, *The Ranks of Death*, wrote: "There is abundant evidence that nearly every part of America was healthful and many parts teeming with population when the whites first came. . . . The disappearance of the Indians was viewed in different ways . . . but in general it may be stated that the better and especially the religious elements of the Spanish and French deplored it and worried about it, while the English, religious or otherwise, seemed to look upon it as an evidence of God's favor to them, His chosen people."

At Plymouth Colony, when differences arose between Indians and Pilgrims over land, Increase Mather, clergyman father of Cotton Mather, noted smugly that "God ended the controversy by sending the small-pox amongst the Indians."

Back in 1618 the pilgrims had started out from Holland, heading toward Virginia. But during the voyage 130 out of 180 died, probably from enteric disorders. The survivors scurried back to Europe. Two years later, others made it to Plymouth, Massachusetts.

The coming of blacks to the New World unwittingly brought new diseases that further affected the Indian. Blacks, like whites, had more resistance to smallpox than the red man, but slave ships carried not only smallpox and dysentery, but also malaria and yellow fever. According to Ashburn, "Malaria undoubtedly contributed largely to the extermination or emasculation of the red man and it is at least questionable whether it would have done so had not the black man brought the disease. By the same token, the black man's relative toleration of malaria meant that he could, and did, serve admirably as a substitute laborer for the white master. Had he not brought malaria with him he would not have been needed so sorely . . . and had the slave trade been limited the whole course of American (and possibly African) history might have been changed."

Apparently, medicine was often practiced in early New England by the clergy. One doctor, Zabdiel Boylston of Boston, introduced inoculation for smallpox

Strange germs brought by blacks teamed with bugs nurtured among whites to decimate Indians.

Bugging out on battles

in 1721. With the help of the clergy to insure acceptance, Boylston inoculated his own children and servants. A giant ruckus began, and Cotton Mather and Boylston were threatened. But inoculation spread from Boston to neighboring towns, and into the other colonies. Jenner, the English scientist commonly associated with vaccination, did not make his mark until 1796. Roughly 20 years earlier, George Washington was having his troops inoculated at Morristown.

During the first year of the Revolution, however, an American force attacked Quebec and was thrown back. A siege was established, and Major General John Thomas, a physician, was sent to take command. Unfortunately, General Thomas did not have his troops inoculated. Perhaps he felt there was not time, for the procedure took several weeks to be effective in those days. In any event, smallpox depleted the Revolutionary troops and they retreated, leaving their sick behind them. General Thomas himself died of smallpox.

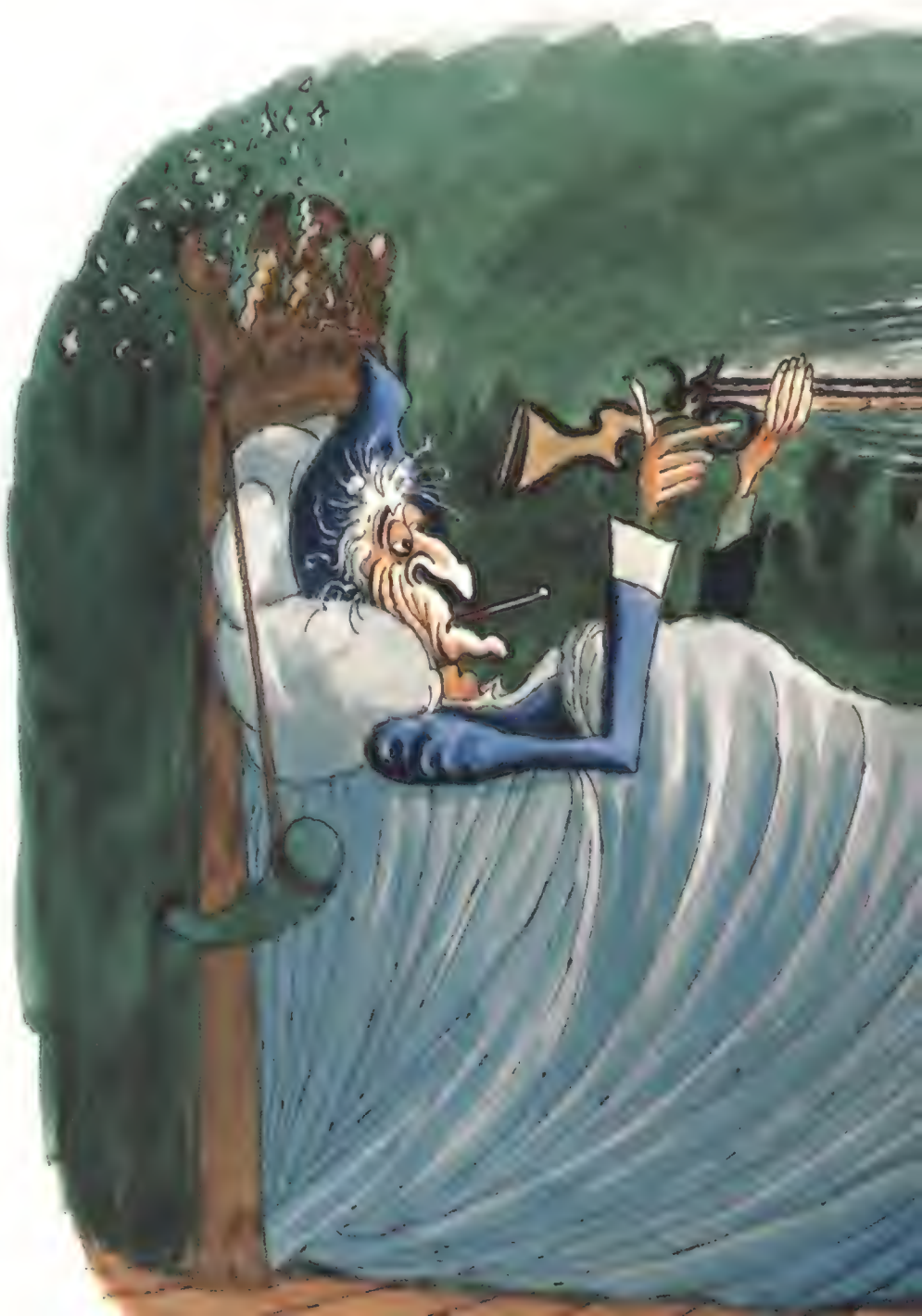
Diseases that are losing their terror today because of inoculations and antibiotics plagued the Revolutionary army. In 1776, an epidemic of typhus swept through Colonial troops stationed in New York.

In 1800, Napoleon envisioned a great colonial empire in the New World, and in two years was readying battalions to sail over and occupy New Orleans. Suddenly within six months, in 1803, he did an about-face and sold the huge Louisiana Territory to the surprised Americans for a mere $15 million, doubling the size of the young republic. Some historians say that Napoleon needed money for an impending war with England.

But others remind us that part of the French colonial empire had been established in Haiti, the western part of Hispaniola. After a bloody revolt there of blacks against colonial planters, a self-educated, freed slave Toussaint L'Ouverture took over the island, drove out the English and occupied the Spanish part. He was made commander of the French forces there.

When Napoleon came to power, Toussaint, "Bonaparte of the Antilles," declared himself governor and set up a constitution for the island. In the spring of 1802 Napoleon responded with troops that defeated Toussaint's blacks in Haiti. But victory quickly turned sour when 40,000 soldiers, sailors, officers and civilians, died from yellow fever. Napoleon received news of the disease-ridden land which had destroyed his troops. A few days later he exploded in the middle of a conversation, "Damn sugar, damn coffee, damn colonies!"

To abandon Haiti meant that he would no longer need Louisiana, which was to provide a granary for Haitian sugar. Within weeks Napoleon told Talleyrand that he renounced Louisiana, but did not want it to fall into British hands. So the Americans, hoping to buy New Orleans, were offered territory that would fill part of 15 states. They can thank, in part, the mos-



Revolutionary War battles often were won not by getting there "fustest with the mostest," but by staying there longest with the wellest.

quito that spreads yellow fever in Caribbean climes.

In the American Civil War, sudden and uncontrollable disease loomed as the major killer. Both sides had to fight sickness more than the enemy, and deaths from diseases were about double those from wounds. Almost every unit of the North and South was riddled with dysentery, malaria, measles, typhoid fever, smallpox, tuberculosis and other diseases. Medical records show repeated references to acute and chronic dysentery, probably typhoid. The Army of the Potomac suffered in camps around Washington where the land was swampy, dirty and undrained. It and other Union armies, combined, listed more than one-and-a-half million on sick call by the end of 1862.

Before the century was over, Americans were involved in a different kind of war, siding with Cuban rebels for the withdrawal of Spain from Cuba. In the Spanish-American War deaths from disease and other causes far outnumbered American losses in battle.

By World War I "the old diseases such as smallpox, typhoid fever, tetanus, diphtheria and dysentery which had long been more dreaded than the enemy, were rendered innocuous by preventive vaccination," wrote Ralph H. Major in *Fatal Partners—War and Disease*. The American army had also learned concern for water supplies and sanitation.

However, a worldwide influenza epidemic hit the United States in 1918. More than 50,000 troops died of it, compared to 49,000 killed in battle during the war. Nearly 800,000 soldiers were ill in army hospitals, disrupting training. (This year, 1976, all Americans may be offered shots for a flu similar to the 1918 variety.)

Disease was one of many factors in American history and a humbling one. But Man eventually uncovered and turned the tables on goodly numbers of "the bugs" that had plagued him.

By David Bourn

Giant tortoises do almost too well on island reserve

As many as 150,000 relicts of a bygone age scour an Indian Ocean atoll for food, affecting its vegetation and their future

Photographs by Jay C. Shaffer

Shortly after dawn on the atoll of Aldabra, tortoises move across the close-cropped grass while feeding.

Three hundred million years ago the ancestors of a remarkable group of animals—the reptiles—made their first appearance on the world's stage. During the next 150 million years they evolved and diversified until they became the dominant form of animal life on the planet. This period of Earth's history has become known as the Age of Reptiles, a time in which a tremendous variety of these vertebrates roamed the lands, swam the seas and lakes, and even took to the air.

As time went by, animals better adapted to their new and changing environment slowly evolved. Gradually the reptiles were challenged by warm-blooded mammals. Although many of the reptile species are now extinct and their former diversity and abundance are reduced, many others survive: crocodiles, lizards, snakes and turtles. For reasons that are not entirely understood, many of the now-extinct species were much larger than the animals that occur today. Probably the most famous of these giant forms are the monstrous dinosaurs, but there were others as well. Fossil remains of giant tortoises (land turtles) from much more recent times have been unearthed in Africa, the Malagasy Republic, Europe, India and the Americas. These tortoises died out—except on remote islands.

A young tortoise seeking shelter from the hot sun moves past a row of its elders in the shadow of a rock.

Two of the ponderous reptiles bob their heads at each other in recognition during a chance encounter.

In the Pacific, giant tortoises lived on the Galápagos Islands, and in the Indian Ocean they inhabited a number of island groups, including Aldabra, the Seychelles, the Chagos and Mascarene groups. Land mammals were unable to colonize these isolated oceanic islands, despite their evolutionary success on the major continents, and instead the tortoises found refuge there, free from mammalian predation and competition. They thrived on these tropical outposts until Man arrived.

The first mariners who observed them described vast concentrations of tortoises, some five feet in length and weighing several hundred pounds. They were easy to catch and kill and to the meat-hungry sailors they seemed a godsend, for, in the days before steam and refrigeration, a live cargo of tortoises requiring little attention was a most convenient source of fresh food. Eventually human settlements were established on many of the islands; exotic plants and animals were introduced and the islands' natural resources were ruthlessly exploited. The giant tortoise populations of the Galápagos were decimated, and in the Indian Ocean were exterminated everywhere except on the atoll of Aldabra and on Cousin Island in the Seychelles, where a remnant population still survives.

The author studied Aldabra tortoises with Oxford University's Animal Ecology Research Group.

The magical name Aldabra (SMITHSONIAN, May 1972) may conjure up romantic images of a verdant tropical paradise, but the reality is different. For life in general and for men in particular, Aldabra is a harsh, inhospitable and dangerous environment; fresh water is scarce and travel is difficult over the jagged coral; and because of this the atoll has remained almost untouched by Man. It lies at the northern entrance to the Mozambique Channel, 397 miles from the African continent. Four main islands and countless islets ring a large, shallow lagoon to form the atoll, which is 22 miles long and about eight miles wide. The land is derived from an ancient coral reef, now raised only a few feet above the surrounding ocean and transformed into fossilized limestone. Much of this rock has been severely eroded and weathered away to form a pitted and treacherous terrain, on which an almost impenetrable tangle of vegetation grows.

Until the mid-Sixties few people had heard of Aldabra, although for the previous 70 or so years the islands had been intermittently inhabited by a handful of Seychellois. These people fished, cut mangrove poles, collected turtles, coconuts and shells for the lessees of the atoll. In 1966, however, the peace and isolation of the islands were threatened by the publication of proposals to turn Aldabra into an air-staging post for

The jagged terrain can be dangerous; this tortoise, amid bone fragments of predecessors, had no way out.

British and American forces. An international campaign, spearheaded by the Royal Society in Britain and the Smithsonian Institution and National Academy of Sciences in America, was started to save the atoll and its rich animal and plant life. Ultimately the campaign was successful, for reasons of cost as much as conservation. The lease was obtained by the Royal Society, the whole atoll was designated a nature reserve, and a research station was established.

Aldabra has remained virtually unchanged by Man. As a result it still possesses a fascinating variety of rare plants and animals, many peculiar to the atoll. It has been under intensive scrutiny by numerous scientists, particularly biologists and ecologists, since the days of the Royal Society Expedition in 1967. The atoll is the home of the endemic flightless subspecies of the white-throated rail, the Aldabra warbler and the Aldabra drongo; there are large colonies of seabirds including the frigatebird, the red-footed booby and tropicbirds; there are many land crabs including the rather frightening coconut crab; but perhaps the most unusual aspect of all is the presence of the relict population of giant tortoises, *Testudo gigantea*.

A closely related species still survives on the Galápagos; there they are relatively few in number but more diverse in form and habitat. In contrast, the Aldabra tortoise population is large and lives in a truly wild state. It is the best example of a terrestrial reptile that is the dominant herbivore of its ecosystem.

It was not until the mid-Sixties that any serious studies were conducted on the tortoises, and these were relatively short. For such an apparently long-lived and slow-growing animal something more was required. In 1972 a long-term Giant Tortoise Study Project was set up by Malcolm Coe of the Animal Ecology Research Group at the zoology department of Oxford University, with the object of monitoring the population.

I spent nearly two years on Aldabra completing the first phase of this project, and returned to Oxford at the end of 1974 to analyze the results. Field studies continue, but a clearer understanding of the dynamics of the tortoise population already is emerging.

One of the primary objectives in any animal population study is of course to determine how many animals there are. By randomly sampling as much of the atoll as was practicable and counting the number of animals within plots of a known size, it was possible to calculate average tortoise densities and from these figures to estimate the total population size. This turned out to be much higher than anyone expected, at around 150,000 animals. They are not evenly distributed over the atoll. Although they occur on three of the four major islands that bound the lagoon, the vast majority are found on Grande Terre, the largest island, the bulk of them at the eastern end. There they exist in much higher concentrations than any other

About mid-morning the tortoises stop feeding and head for the shade of a grove of trees.

Like so many commuters, the tortoises leave the shelter as the sun's intensity lessens after noon.

animal of comparable size living in the wild, with as many as 9,000 per square mile.

Living and working in such an environment is a strange and remarkable experience. Emerging from my tent each morning at dawn I felt as though I were part of an almost prehistoric scene, with slumbering giants, like so many rounded boulders, scattered haphazardly over the ground. They sleep with their limbs protruding in unlikely positions from under their dew-covered shells, and their long wrinkled necks outstretched. Clearly they fear no enemies here. As it gets lighter they waken, blink slowly as if in surprise at their surroundings, but soon start to feed—meticulously plucking the smallest pieces of vegetation with their horny serrated jaws. They remind me a little of hunched, wizened old men without any teeth. They continue to feed until mid-morning, when the tropical sun is high overhead.

Reptiles, unlike mammals, are unable to control their internal temperature by sweating to keep cool or shivering to keep warm; their temperature is largely dependent on that of their environment. Tortoises are no exception, but they have geared their daily pattern of activity so that their body temperature does not become dangerously high. At about 10 A.M. they start moving away from the open grasslands in which they have been feeding to the shade of the nearby shrubs and trees. Here they congregate to rest and shelter from the heat of the midday sun. In some places hundreds of tortoises may be found asleep under favorite shade trees. By mid-afternoon, with the sun lower in the sky, the seemingly lifeless forms beneath the shade trees begin to stir, then slowly emerge and lumber off to feed.

The tortoises also show a seasonal pattern of activity. Although Aldabra lies only some ten degrees below the equator and the variation between summer and winter temperatures is not very great, other seasonal changes are quite distinct. In October and November the strong prevailing southeast trade winds drop and are replaced by the lighter, more variable winds of the northwest monsoon, which bring the rains. Inland pools begin to fill and the vegetation becomes lush and green. There is more food available now and the tortoises grow most rapidly at this time of year. The rains herald the start of the breeding season and the land echoes with the sounds of grunting, groaning male tortoises mounting the rounded shells of their mates. The sexes can be distinguished easily in mature animals; the males are generally larger with much longer tails and a deep depression in the underside of the shell, making copulation slightly less precarious. For smaller animals, sexing is virtually impossible: even the tortoises are sometimes confused.

In April the drier southeast trades return and by July or August, the coolest months of the year, the females start digging their nests in suitable patches of soil and laying their eggs. During the following months the island takes on an increasingly brown and parched appearance and there is little food available to the tortoises. Their growth virtually ceases, and by the time the long-awaited rains return in November, the necks and legs of many animals are thin and gaunt. Soon after the first heavy storms the hatchling tortoises

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His grandfather brought back some photographs from Egypt, but not in color

Unless you are involved with the theory of the photographic process, you have probably never heard of the late C. E. Kenneth Mees. Nevertheless, precious few of the photographs you have ever taken or seen would have been practical but for him. With an already brilliant reputation as a photographic scientist, he joined us at 30 in 1912. It was the photographs from his grandfather's trip to Egypt that got him interested as a boy in photography.

Kodak

begin to erupt from their underground nests. They are at their most vulnerable in the first few years of life, only a few inches in length. With soft, flexible shells, they are the prey of land crabs and introduced rats.

The foregoing is a generalized account of the events that occur during a tortoise year. To tell more precisely what is happening, more than 7,000 animals, mainly in the most densely populated eastern region of Grande Terre, were individually marked, measured and released to provide baseline statistics on the population structure and distribution. The marking method consisted of drilling a shallow depression in, but not through, the horny outer layer of the tortoise shell and implanting a numbered titanium disc the size of a dime.

It is now seven years since the first tortoises were marked and the method has proved highly successful. In the future, with the increasing amount of recapture information that will become available, we expect to obtain a detailed picture of the daily and seasonal movements of tortoises, their rates of growth in different areas, their life expectancy, and estimates of any population changes.

The recapture information already obtained indicates that a considerable proportion of the population may be regarded as sedentary, not moving very far from their sites of marking. However, some individuals are capable of moving surprisingly long distances (for a tortoise) in relatively short periods of time. For instance, an animal marked at the extreme west of Grande Terre was recaptured in the east two years later—at a minimum, 19 miles. Other similar long-distance movements indicate that individuals within an island population are capable of freely intermixing. It is even possible that a tortoise occasionally may swim and drift from one island to another.

The largest animal that I found weighed 250 pounds and had a length of four feet. Historical records and museum specimens of animals collected in the 19th century show that in the past much bigger tortoises occurred, but some of these may have been taken from Aldabra to environments like the Seychelles, where food was plentiful throughout the year, and as a result they grew much larger than the native stocks on Aldabra.

Nature seems to have set up its own interesting ecological experiment on Aldabra, with the largest island having generally high tortoise densities, two having low densities and the smallest no tortoises at all. An ideal situation therefore exists in which to study the various interactions between tortoise population and vegetation. Where tortoise densities are high the vegetation is usually open, and the growth rate and average size of animals are less than in areas where the vegetation is thicker and there are fewer tortoises. When tortoises are introduced into previous-

An adult confronts some land crabs. For a newly hatched tortoise the encounter could have been fatal.

A tortoise pulls strenuously at sparse foilage. They clear whole areas of small trees and shrubs.

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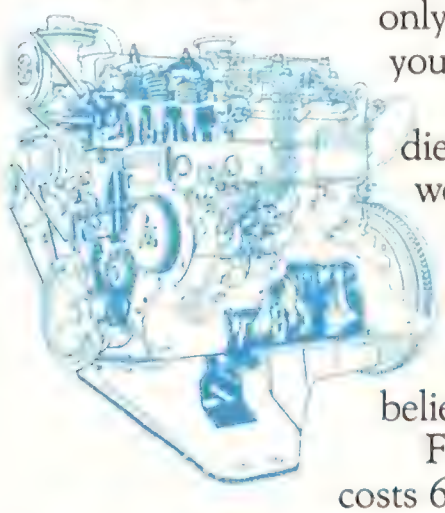

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ly tortoise-free areas their growth rate increases dramatically, and at the same time the undergrowth is efficiently cleared.

Tortoises are primarily grazers, feeding on grasses and other plants to form extensive areas of very low, well-cropped turf. During the hottest months, tortoise concentrations build up along the coast. There shade-giving trees are often scarce and as a result large numbers congregate under those trees that do exist, and there is great competition for shelter, with tortoises sometimes stacked two or three high. Considerable damage is caused by this activity, the soil being eroded away, root systems exposed and trunks scarred.

In some places trees have been and still are being killed and their regeneration is severely restricted because tortoises trample or feed on young seedlings. We think that in the southeast coastal region this tortoise activity over the years has destroyed large areas of low shrub trees. In consequence, on the sandy, raised storm beach a few yards inland from the rocky coastline, these shrubs have been replaced by grassland.

During the hottest months of the year tortoises feed extensively on these grasslands, keeping them trim and well-cropped. But as one walks along this ruggedly beautiful strip with, on one side, the waves of the Indian Ocean pounding the rocks, and on the other a stretch of bare, rough, rocky ground, one realizes that however beautiful the scene may be it is now a death trap for the tortoises. The bleached, white remains of tortoise shells stand out in stark contrast to the gray rocks and green grasslands; hundreds of tortoise skeletons can be seen in a few hours' walk. The shells persist for more than a year, so that although one's first impressions of tortoise mortality are exaggerated, it is nevertheless considerable.

Occasionally during the wet season the weather is dull and overcast for a few days at a time and under these conditions the tortoises do not return to the shelter of their shade trees. Gradually they may move farther and farther away until, when the weather clears, there is no adequate shade available for them nearby. They then make desperate attempts to stay cool by salivating, trying to shelter under driftwood logs or behind rock pinnacles, digging into the sands of the raised storm beach and even seeking the shade of a human observer. Usually, however, there is no one to help them; they become dessicated and overheated in the sun and die.

The giant tortoise population of Aldabra is a remarkable one. It is very large, and in some areas the density is exceptionally high. Tortoises are extremely hardy beasts, able to withstand long periods with little food or water and to survive in a difficult, dangerous terrain. Despite the robust nature of the species, there is now a distinct possibility that the density in certain regions is reaching dangerously high levels, both for the population itself and for the vegetation. The continuing field studies are monitoring the effects of tortoises on their habitat, and the condition of the population, with special attention being given to the tortoises' reproductive ability. Eventually we hope to compare the way in which this unique population functions and is controlled with the way that other more advanced species are regulated.

A bleached shell is mute testimony to the fate of a tortoise that probably died from overheating.

Taking a defensive stance, a tortoise draws its head and heavily scaled limbs partly inside protective shell.

Louis Lozowick (see p. 95) posed in Ukraine with father, about 1904, prior to entering art school. Below, Alexander Archipenko and his wife arrived stylishly in New York in 1923.

By Jo Ann Lewis

Immigrant artists: who they were and what they did

Triumphs and troubles of the people, many of them exiles, who, within 100 years, created a world art in freedom of America

Joseph H. Hirshhorn arrived in this country in 1905, an immigrant child from Latvia. Before him and after him, by similar routes and for similar reasons, came thousands of other immigrants seeking peace, opportunity and freedom. Among them were some of the most important artists of the 20th century—Max Weber, Gaston Lachaise, Mark Rothko, Marcel Duchamp, Arshile Gorky, Willem de Kooning, Hans Hofmann, Josef Albers, Ludwig Mies van der Rohe and, more recently, Lucas Samaras and Christo. It is fitting that the Smithsonian's Hirshhorn Museum and Sculpture Garden in Washington, the fledgling national museum of modern art, celebrate the Bicentennial with a salute to the artists who, within the past century, have helped transform this country from a provincial art dependency into a world center of the arts. The exhibition, "The Golden Door: Artist-Immigrants of America, 1876-1976," opens May 20 and runs through October 20.

To assess the impact of America upon these artist-immigrants, as well as to begin to assess their contributions to American art history, the Hirshhorn has assembled the works of 67 painters, sculptors, architects and photographers, nearly all made after the artists arrived in America. Interspersed among them are documentary segments—old snapshots, immigration papers, newspaper clippings and various other memorabilia—which give some idea of how these artists looked and lived. Here, as throughout the show and its 432-page catalog, all expertly assembled by a Hirshhorn curator of painting and sculpture, Cynthia Jaffee

Russia's Ivan Gratianovitch Dombrovski, who became America's John Graham, painted *Two Sisters* in 1944.

McCabe, one has the feeling of venturing on an esthetic journey as well as through an old family album.

All of the artists included in the Hirshhorn exhibition came to this country after the Centennial of 1876, when America's frontier days had come to an end. These "new" immigrants came not to settle a new land, but to escape pogroms, conscription, persecution, poverty, revolution and two world wars. They came in three waves: from 1876 to 1929; from 1930 to 1945, and from 1945 to the present.

The first and largest wave of artist-immigrants came between 1876 and 1929, diminishing only because immigration laws were gradually introduced to slow down the tide. By the 1920s, the first quotas designed specifically to discourage the immigrants from Eastern and Southern Europe were established. By 1929, with full implementation of the restrictive policy, the "golden door" of Emma Lazarus' poem, on the base of the Statue of Liberty, had slammed almost shut, in the faces of those who would attempt to flee totalitarian regimes in both Nazi Germany and the Soviet Union.

Life was not easy for the first wave of artist-immigrants, who make up half the exhibition. The art critics, like the immigration laws, became increasingly

Mr. and Mrs. Henry H. Goldberg

Bibi, one of Pascin's beguiling women. Originally Pincas, he created a French-sounding anagram, Pascin.

hostile. Royal Cortissoz, a senior New York critic, gave his view of what he called "Ellis Island Art" in his book *American Artists,* published in 1923: "The United States is invaded by aliens, thousands of whom constitute so many perils to the health of the body politic. Modernism is of precisely the same heterogenous alien origin and is imperilling the republic of art in the same way."

Most of these early arrivals did, in fact, come in steerage through Ellis Island, and then spilled into the teeming streets of the Lower East Side of New York. Jack Tworkov ran a Yiddish-language puppet theater there. Marcus Rothkowitz (Mark Rothko), his mother and sister traveled to Portland, Oregon, with tags pinned to their clothing indicating that they could speak no English. Many felt alienation then and in years to come. Oscar Bluemner (p. 99), an architect who arrived in 1892 from Germany and wrote critical reviews for Alfred Stieglitz's *Camera Notes,* felt that his exclusion from Stieglitz's stable of artists was owing to discrimination. Just a few months before he ended his life, he wrote his dealer and friend, J. B. Neumann: ". . . I feel more than ever that you and I belong here, as artists, as much as do all who are born and all who come here."

The involvement of these artists with the avant-garde movements both at home and abroad (Fauvism, Cubism, Futurism) is clear. All who could traveled to Paris. Weber studied with Matisse, and knew Picasso, Brancusi and other avant-gardists who had come to Paris from all over the world, including John Marin and Alfred H. Maurer from the United States. He arranged the first showing of Rousseau's art in America, at Stieglitz's Photo-Secession Gallery "291," where he, Walkowitz and others also exhibited. Though he withdrew his own work from the famed Armory Show of 1913 because only two paintings were selected, Weber did submit works by his friend Rousseau. Other artist-immigrants in the Armory Show were Bluemner, Joseph Stella, Abraham Walkowitz and Jules Pascin.

The importance of these artists to American art history, apart from their works, was an abiding interest in European modernism, which they injected into a still provincial New York scene. Walkowitz (p. 96) was called by one of his colleagues "the John the Baptist of pre-Armory days, returning from Paris to preach the gospel of modern art."

More important, perhaps, is the fact that these artists of varied backgrounds established an international art community where a commitment to art and new ideas was welcomed. They set the stage for the artists who would come before and during World War

Art historian Jo Ann Lewis recently has been awarded a National Endowment for the Arts critic's grant.

II, when the School of Paris moved, almost in its entirety, to New York. After that, several of them—Arshile Gorky, Willem de Kooning, Hans Hofmann, Rothko, Tworkov and Giorgio Cavallon—played major roles in what critic Harold Rosenberg has called "the first art to appear here without a foreign return address," Abstract Expressionism. It was one of these early immigrants, the Russian artist, dealer, collector and theorist Ivan Gratianovitch Dombrovski (known as John Graham; p. 93), a great thinker and talker, who gave Jackson Pollock and de Kooning their first public exposure in a group show in 1942.

The Hirshhorn exhibition reveals the strong impact America had upon these immigrant artists wherever they were—California, Utah, Pittsburgh or Minneapolis. "We were seeking to find out how the American atmosphere affected these individuals, their art and their development," says Cynthia McCabe.

Of *Battle of Lights, Coney Island* (pp.100-101), done in 1913, Italian immigrant Joseph Stella said: "I built the most dynamic arabesque that I could imagine, in order to convey in a hectic mood the surging crowd and the revolving machines generating for the first time, not anguish and pain, but violent, dangerous pleasures." Just back from Europe, Stella had clearly been taken with the energy, rhetoric and style of the Futurists, which suited perfectly his perception of Coney Island.

Hirshhorn Museum and Sculpture Garden

Prominent as a Precisionist artist, Lozowick (p. 92) arrived in 1906. This is *Machine Ornament #2.*

Whitney Museum of American Art, New York

A haunting portrait

While many artist-immigrants looked around them, others continued to look back. Armenian Vosdanig Manoog Adoian, better known as Arshile Gorky, was such an artist, and one of the most dramatic figures in modern American art history. To avoid conscription into the Turkish army, his father had emigrated to the United States in 1908. Four years later, when Gorky was eight, he and his mother posed for a photograph to send to the father in Providence, Rhode Island. In 1915, the Turks began a massacre of all Armenians within their borders. Gorky, his mother and sisters were forced to make a 150-mile march into what is now Soviet Armenia. In 1919 his 39-year-old mother died of starvation in his arms. After he finally arrived in America in 1920, Gorky painted a haunting double portrait based on the old photograph of him with his mother (at right).

Another figure who would play a major role in American art was Willem de Kooning, who arrived in 1926 from the Netherlands. De Kooning, however, came not as an immigrant, but as a hand aboard a British freighter. He jumped ship and settled down as a house painter and carpenter in Hoboken until he'd earned enough money to rent a studio in New York.

Arshile Gorky's mother died of starvation in Armenia. This is his portrait of mother and son.

Hirshhorn Museum and Sculpture Garden

Influence of Cezanne is strong in Abraham Walkowitz' skeletal study of his beloved adopted New York.

National Gallery of Art

The city was much in the minds, and talents, of immigrants, as in Cubist version by Max Weber.

For 35 years he never dared leave the country for fear that he would not be readmitted. In 1961 he was finally persuaded to fly to Canada, get a visa, and come back to be sworn in as a citizen the same day. He did so—and just two years later he was awarded the Medal of Freedom by President Lyndon B. Johnson.

Just before this first long period of immigration closed in 1929, French-born Gaston Lachaise, who with other immigrant sculptors (Saul Baizerman, Raoul Hague, Chaim Gross, Ibram Lassaw, Alexander Archipenko and Naum Gabo) had helped bring American sculpture into the 20th century, described his perception of the American art scene in 1928: "The path to achievement . . . is as bare and dangerous as the trail over the plains, across the Rockies, to the Far West. Financial strain from all sides, no genuine support for the better part of a lifetime are yours. Will power, tenacity, pride . . . aggressiveness . . . long stretches of labor . . . are your only assets. . . . The American artist . . . has begun to grow roots and function in the rocky soil of America. . . . It is America's opportunity to found a supreme, complete and permanent expression which would overwhelm the world. . . . The most favorable ground for the continuity of art is here."

The most favorable ground for the continuity of art clearly was in America, particularly from the rise of Hitler to the end of World War II. It was during this period, from 1930 to 1945, that New York replaced Paris as the center of world art activity. Though the quota system had drastically reduced the number of aliens being allowed in (from 1.4 million between 1926-30 to 220,000 between 1930-35), provision was made so that teachers of higher education engaged in their professions could be issued nonquota visas, with a written invitation from an American university or art school. Hitler's purge of Jews and dissidents in the universities and civil service in 1933, and the closing

Parure. It is a word which is difficult to translate.
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1976—Guerlain creates Parure.

of the Bauhaus, brought to America an influx of artists, writers, scientists, musicians and composers whose commanding talents transformed the creative identity of the nation.

In the early Thirties the Institute for Advanced Study at Princeton started the ball rolling by inviting Albert Einstein and art historian Erwin Panofsky to join its faculty. In 1933 Josef and Anni Albers came from the Bauhaus to teach at Black Mountain College in North Carolina, a seminal place where Kenneth Noland, Robert Rauschenberg and many others were students. Albers later went to Yale to found one of the strongest art departments in the country. Architects Walter Gropius and Marcel Breuer went to Harvard; László Moholy-Nagy to Chicago to start the New Bauhaus, which became the Illinois Institute of Technology. Ludwig Mies van der Rohe joined him there.

In New York, Hans Hofmann opened an art school which became the most influential training ground for young painters in America. European dealers like Curt Valentin had a major impact, adding new dimensions to American art collecting. Another whole exhibition could be made assessing the contribution of the printmakers who came to New York at that time, most importantly Stanley William Hayter and his Atelier 17, where new techniques in intaglio printing were being explored by immigrants Gabor Peterdi and Mauricio Lasansky. Peterdi went on to teach printmaking at Yale and Lasansky to do the same at the University of Iowa, and the print boom was launched, followed up by fine lithographic publishers like Tatyana Grosman in the Sixties. Here again, European print dealers such as Ferdinand Roten and others played a major role in arousing American collectors to the pleasures of fine prints. In the process, our museum print departments were filled with treasure.

Considerable notice was taken of these artists by the press and by the art world. There were several exhibitions. There is a photograph showing the 14 "Artists-in-Exile" who exhibited at Pierre Matisse Gallery in 1942. Five of them, André Breton, André Masson, Max Ernst, Marc Chagall and Jacques Lipchitz, owed their lives to a fascinating figure named Varian Fry, who through his Emergency Rescue Committee helped more than 1,500 artists and intellectuals out of occupied France in 1940-41. Marcel Duchamp was one of the last. The Museum of Modern Art in New York had a list of people they wanted to get out, and they and Peggy Guggenheim (Max Ernst's wife at the time, see SMITHSONIAN, March 1975) were major financial backers of the rescue operation, which was centered in Marseilles. These artists were admitted under an emergency visitors' visa program for "saving persons of exceptional merit, those of superior intellectual attainment. . . ." Many returned to Europe after the war, but their presence had electrified New York.

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Hirshhorn Museum and Sculpture Garden

Architectural training of Oscar Bluemner, who came in 1892, is evident in his ambient *Morning Light*.

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The artist-immigrants of America

After the war, artists came to America because the impetus for art was here. They came from all over, as they had to Paris before the war, to develop and exist as artists. Naum Gabo and Max Beckmann arrived first, having waited out the war years in Europe. Lucas Samaras and Chryssa, with their memories of World War II, came from Greece; Willem de Looper from the Netherlands, Christo from Bulgaria, Arakawa from Japan, Frank Bowling from Guyana and Isaac Witkin from South Africa. Last fall, on 53rd Street in New York, just a few doors away from the Museum of Modern Art, a group of new émigré artists from the Soviet Union opened a cooperative gallery. Their isolation from the language, from an understanding of the ways of the art world, recalls the isolation of their predecessors.

This exhibition and its catalog are not about stylistic developments, but about people who make art. Together they comprise a major human document and a fitting tribute to the importance of America's immigrant artists.

In 1965 President Lyndon Johnson proclaimed Ellis Island part of the Statue of Liberty National Monument. The same year Congress virtually abolished the national origins quota system, a scar on the nation's conscience since 1924. That obstacle removed, those opposing symbols of welcome and obstruction, the Statue of Liberty and Ellis Island, at odds for a century, were at last united once again in the spirit of America's Founding Fathers. That is indeed a significant cause for celebration on the occasion of this Bicentennial.

Joseph Stella's *Battle of Lights, Coney Island*: "... the most dynamic arabesque that I could imagine."

Yale University Art Gallery, Gift of Société Anonyme

COM
PAR

By Phyllis C. Richman

Tinkle, clink and ping: an underwater band

Sound behaves very differently underwater, and these musicians test effects to mixed reviews

They laughed. Two or three hundred people had waited through a sudden rain on the Caribbean island of St. Martin to hear the American Underwater Band give a concert in the swimming pool at Marriott's Mullet Bay Beach Resort. The musicians suited up, adjusted their air tanks and face masks and drifted to the bottom. Six feet under water they industriously made music, which, if the microphone were removed from the water, would have been completely lost to the crowd above.

With a microphone on, rhythmic tinkles and clinks and pings melded into an improvised piece, as if somebody had taught a calypso beat to the temple musicians of Tibet. But despite a flashing montage of underwater scenes on a movie screen nearby, the crowd gradually drifted away, not without a few preliminary jokes.

Not everybody scoffed. Members of a local steel band, after a few minutes of listening, worked up enthusiasm for trying steel drums underwater. And the next day somebody asked band manager Richard Bailey for his autograph.

Bailey's ambition to perform music underwater had grown out of a proposal written in 1967 for Westinghouse on underwater education, recreation and the arts. Westinghouse didn't move ahead with the project, but the concept continued to float around in Bailey's head.

In the summer of 1974, he approached a Washington improvisatory music group known as "Evolution." Dressed in his usual woven aluminum necktie, sandals and double-breasted suit, Bailey soberly invited the band to sink themselves to the bottom of a pool for the next jam session. Naturally, the band was more than skeptical. Continuing to pester the band, Bailey began to sound more realistic to the musicians when he arranged scuba lessons. They decided to try it.

At first the band tried to play anything and everything: pots, frying pans, onion dicers, combs. There were even a few legitimate instruments such as cowbells and triangles, but from the outset the band had rejected the notion of just adapting land instruments to the new medium. The musicians wanted to reflect the new physical and emotional environment in which they found themselves.

The first string instruments they designed were a washout, as was anything made of wood. Metal percussion instruments seemed to work best, but they were unpredictable. It was Mike Smith, the drummer, who originally produced whining sounds by rubbing a porcelain pot. That was their first innovation.

By the time they had their first open-water rehearsal, the group consisted of three musicians, plus Bailey as manager and Bob Burruss as instrument designer. Band director Trupp describes himself as a "musician's musician," adding that he has been a taxi driver, spy, writer and drummer, and is "a firm believer in magic."

Trupp recruited Larry Massett, a pianist and science writer who was studying for a master's degree in music. He joined because it sounded like fun, stayed because he found it musically exciting.

Then they invited Bonnie Marcus, guitarist and pianist. Fortunately, she wanted to learn to dive. Like the others, she wound up being captivated by the experience, although she still sees the music itself as background: "I'd rather play underwater music than listen to it."

By the time they reached St. Martin in December 1975, the band had developed a "Burratone"—inverted steel domes of varying pitches, which to the uninitiated looked suspiciously like mixing bowls. They had a "glass harp," a series of Pyrex tubes, attached to a resonating box, which made a faint cellolike sound when rubbed underwater, and a few other instruments which had started life as plastic stocking packages and soup pots.

The band had really come to play in the ocean. The instruments—and the musicians—had never been tested in open water. Playing in the ocean was a far cry from submerging in chlorinated pools with ladders and tile decks for holding equipment. They didn't have enough lead to weight the flimsy instruments in the surging water. But their first concerts in swimming pools in Washington had perils, too, although of a more civilized sort. First, a newspaper critic summed up the music as "a surprising variety of distinct sounds, some of which are not altogether displeasing . . . if it wasn't a joke, what was it?" From that uncertain beginning, the band went on to being booed out of the water in the midst of

A musician adjusts "Burratone," an instrument designed to be played underwater, during a test session. The spectators seem skeptical at best.

Photographs by Flip Schulke

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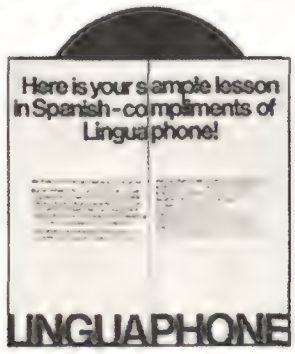

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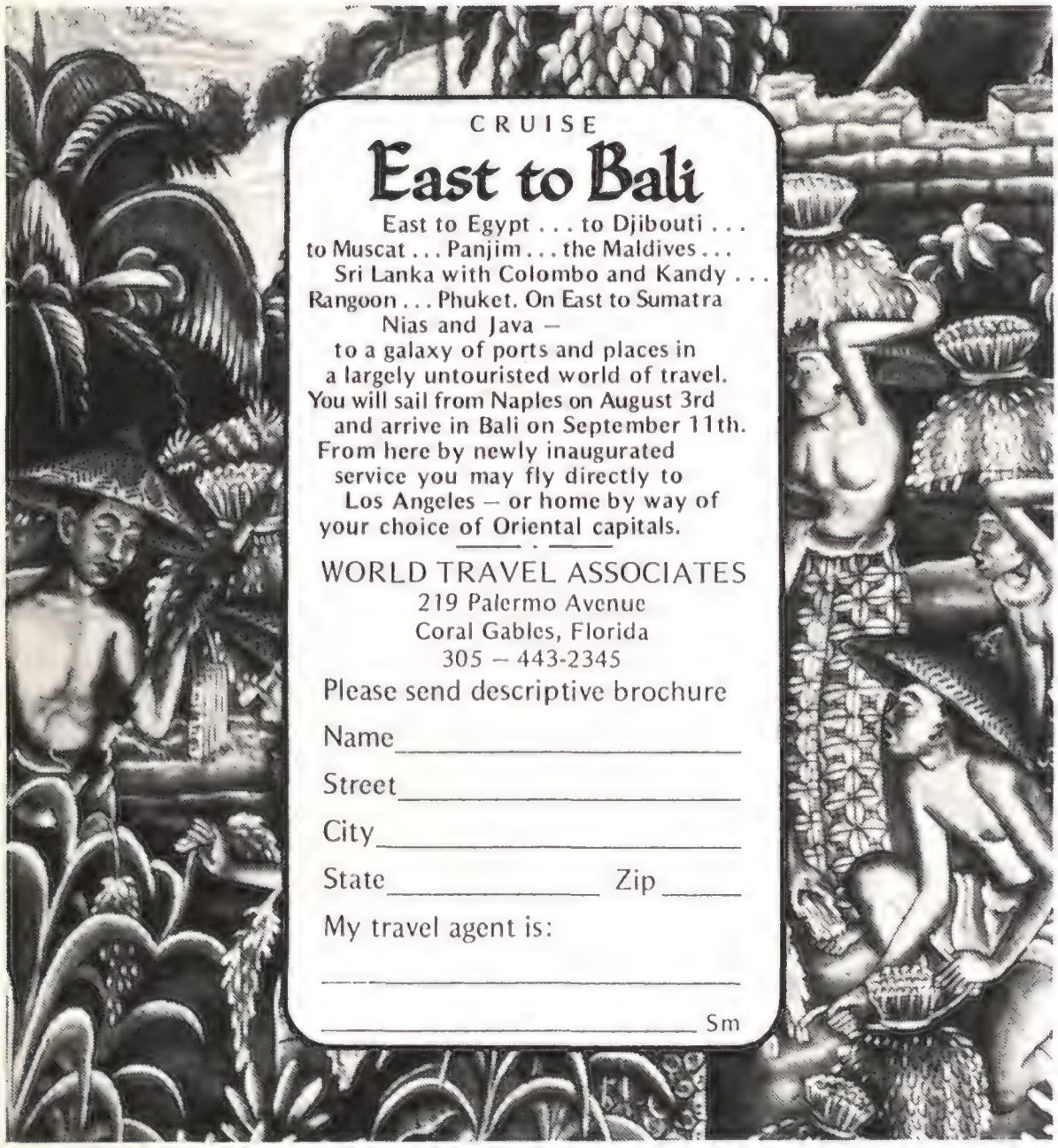

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In the pool, vocalist Bonnie Marcus tries her hand at the glass harp.

an extravaganza sponsored by the Department of Recreation. So playing for indifferent fish seemed no challenge, once they had learned to dive in the surf.

The world premiere open-sea concert of the American Underwater Band was less than auspicious. The day was gray and overcast, the sea muddy and churning. The band looked edgy. Band members back-flipped over the side of their boat and slowly swam to their stage. For some it was their first view of an underwater garden of stag-horn coral and undulating sea fans. At first the beauty eclipsed the prospect of playing music, but gradually they took their stations.

As Trupp later described it, "The more we played, the more the sounds fused to fit the environment—an environment none of us wished to leave."

Meanwhile, I was floating overhead with a snorkel and could see the surging water turn the band into a slow-motion comedy as pool-weight instruments were

The author, a free-lance writer who has published a guide to Washington restaurants, is fighting fear of water.

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Another musician takes to the pool with another "instrument" to be tried.

tossed like toothpicks. The sea itself was playing the instruments. Here the band had to adjust to the rhythm of the sea, rather than impose its own. Earthly rhythms sounded alien.

Back home they started working on new instruments. They discussed using the flow of water, rather than air, to produce sound, making something like a bellows-operated underwater pipe organ. Another idea was for a cavitation instrument, a kind of spinning wheel which would cause low pressure to form around it. They talked over the use of different gases and liquids to change frequencies and pitch, discussed new coating compounds for rubbing instruments, and the sound-making properties of glass, plastic and more exotic materials.

The band works by trial and error. In Burruss' basement he consults a book on mechanical vibrations to devise a steel xylophone, and Massett, who has near-perfect pitch, listens as they strike the rods with a screwdriver to test their tones. Once they have the xylophone rods cut, they sit around deciding how to amplify them and whether a resonating chamber does any good.

Their primary goal is esthetic rather than scientific. Instrument making, as Massett describes it, has traditionally been an empirical process dealing with

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such limitations as the size of the instrument, noise level, practicality and appearance. Organ building, for instance, is not done by a formula, but remains a matter of craftsmanship. Burruss' prototype of a single organ pipe is meant to look, as well as sound, beautiful, and so he constructed it of copper tubing and yellow acrylic reeds. He hopes it will make a sound underwater like nothing that has been heard in air.

Other people have found ways to play music underwater. A violinist has bowed his violin in a tank on network television, and percussionist Max Neuhaus devised a water whistle to play in pools.

Basically, all the sounds that can be produced in one medium—air, for example—can be produced in another, such as water. The problem is to devise a way to produce these sounds and to project them. Transmitting sounds through water has special problems: the speed at which sound waves are propagated is much greater, and the sounds are affected by temperature and salinity and density changes. For a human listener, the most startling attribute of underwater music is its omnidirectionality: the sound seems to come from everywhere at once (a critic hearing Neuhaus' water whistles reported a sense of interiorized sound).

In the band's up-to-earth moments, they work on scoring underwater films. After all, they ask, why should one hear trumpets and trombones when watching marine life? They want to do a light-sound-film package. They plan more concerts in swimming pools, more trips to the Caribbean. In the more distant future they see special music composed for a large number of instruments to be played at various depths in the ocean, interpreting the sounds of the sea and the experience of weightlessness.

When people ask them, as they often do, "Why play music underwater," Bailey answers, "Why play music at all?" So the underwater band struggles on, rehearsing in hotel pools and inventing in basements and garages. Two more musicians have signed on: drummer Henry Dennis and guitarist Jessie Boggs. Whatever they scavenge may become a musical instrument and readjust their sights. Now, with a new hydrophone, they can do an air-water duet with Bonnie Marcus only partly submerged, singing the theme she wrote for the band:

What is there to hear in a dark and restless sea?/Drop all your earthly cares and come with me./Together we may find a foreign sense of time,/As we explore another possibility. . . .

Into the open sea—not all the instruments are improvised. Here familiar triangles are sounded. The band is working now at scoring underwater films.

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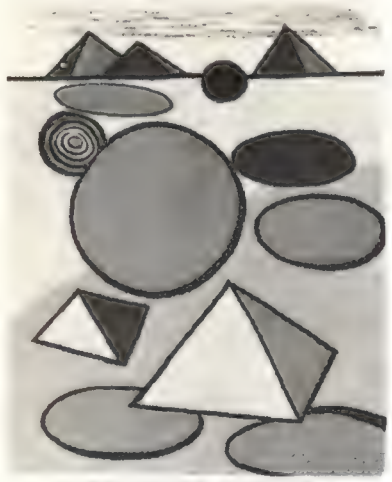

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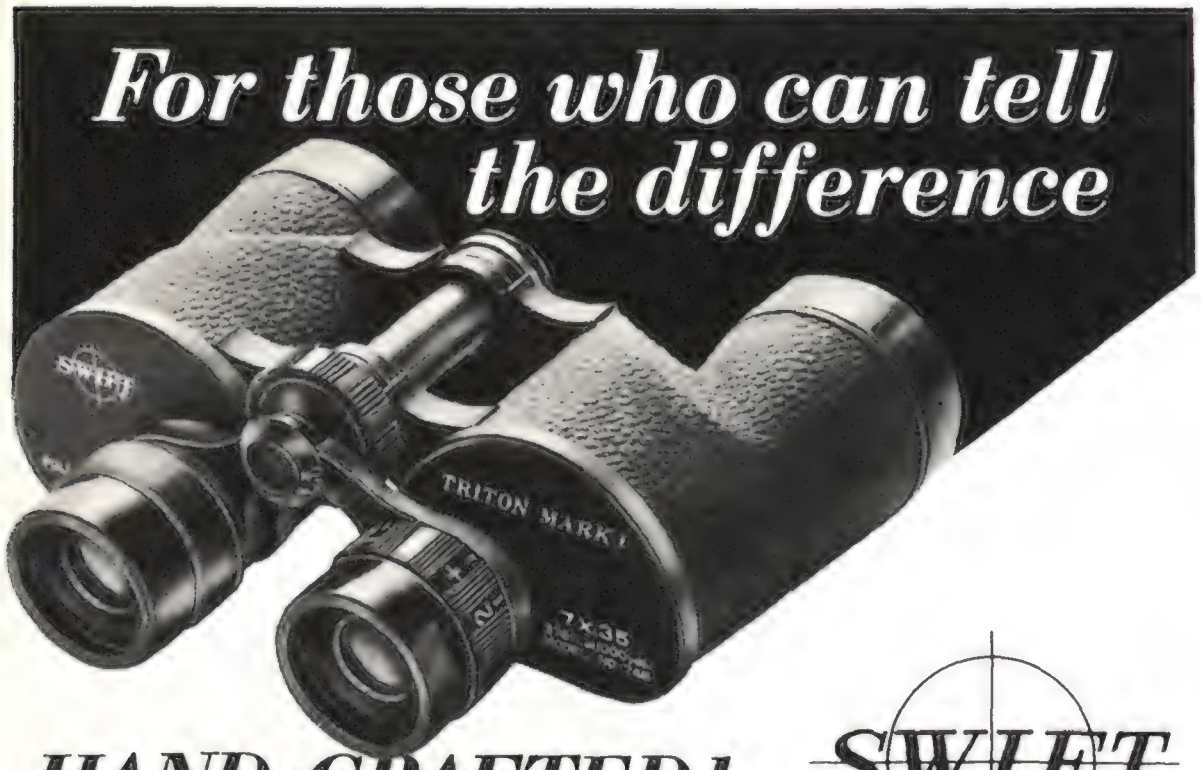

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Book reviews

The Formation of the American Scientific Community: The American Association for the Advancement of Science, 1848-1860
Sally Gregory Kohlstedt
(University of Illinois Press, $10.95)

"History," Sir John Robert Seeley declared at the end of the 19th century, "is past politics." With an eye to social history, ethnic history, women's history and similar subjects that currently crowd college curricula, one is initially tempted to dismiss this as a bit of smug Victorian nonsense. It is certain that Clio, patron goddess of history, has discovered much worth contemplating in vistas once defaulted to earnest but shallow sociologists. And these vistas may be far removed from anything pertinent to the structure, organization and administration of the state. Yet politics beyond its pure Aristotelian sphere deeply pervades historical realms that have little to do with presidents and parliaments.

One such realm is science, whose history is often fundamentally tied to the strategy of power. This is obvious in our own time, as science contends for a better spot at the public trough. American scientists have been immersed in political affairs for well over a century. Indeed, the situation was doubly complicated in the mid-19th century, for, simultaneously, scientists were seeking to legitimize their profession and to establish institutions politically structured to bring about the ostracism of dabblers and quacks.

The later 1840s were the crucial years for the professionalization of American science, marked as they were not only by founding of the Smithsonian Institution

and the definition of its mission by Joseph Henry, but also by the opening of scientific schools both at Harvard and at Yale, a sharp increase in funding for federal scientific agencies such as the Coast Survey, and the appearance of our first truly national scientific organization, the American Association for the Advancement of Science (AAAS).

Joseph Henry in 1857

Sally Kohlstedt's account of the background and first dozen years of the AAAS nicely replays the disharmony between rival pretenders to designation as the champions of "true science." The faction that won control in the early 1850s subsequently concluded that an unrestricted membership and true professionalism were inherently incompatible, and established—with the assistance of sympathetic politicians—an elite academy free from democratic constraints, "to guide public action in reference to scientific matters." For better or worse, both the National Academy of Sciences, founded in 1863, and the broadly based AAAS have remained more or less innocuous politically. Science has acquired its leverage on Capitol Hill by other means. Yet Kohlstedt presents strong confirmation for Bernard Shaw's dictum that "all professions are conspiracies against the laity."

Establishing the legitimacy of any elite enterprise in a democratic society is difficult at best, and it was all the more so with science in the 1850s, since the clique that consolidated its leadership of the AAAS sought to exclude from power not only all sorts of amateurs, but also com-

GENESIS XLIII 11. And their father Israel said unto them, If it must be so now, do this; take the best fruits in the land in your vessels, and carry down the man a present, a little balm, and a little honey, spices, myrrh, nuts and almonds:

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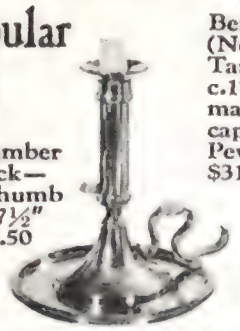

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petent professionals whose precepts or personal style seemed peculiar. It also broadcast the dubious notion that practical invention flowed downward from abstract scientific principles, and that there thus existed a natural hierarchical relationship between "the true man of science" and the mere practical man. While this leadership clique no doubt had the best interests of American science at heart, it often appeared to have two different sets of professional standards, one for itself, another for outsiders.

Yet if these leaders stirred deep animosities they also attained much of what they sought. When the AAAS was founded, "distinctions among scientists . . . amateurs, and interested onlookers" were generally blurred; by 1860 these categories were quite clearly demarcated. The AAAS, that is, had at least partly clarified the anomalous status of science in American society, and had defined if not resolved the tension between professional aims and popular needs.

In this sense, its history reflects tensions that are fundamental to the American political system itself, and is far more illuminating than conventional "past politics" history generally is these days. Anyone seeking fresh perspectives on politics in America is well advised to study the history of American science. Kohlstedt's book would be a fine starting point.

—Robert C. Post
Historian, National Museum of History and Technology

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Laurie Lee
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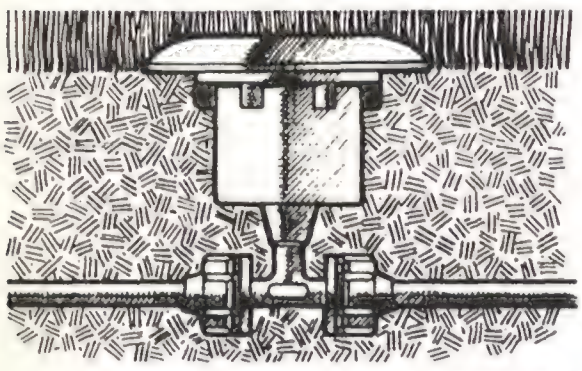

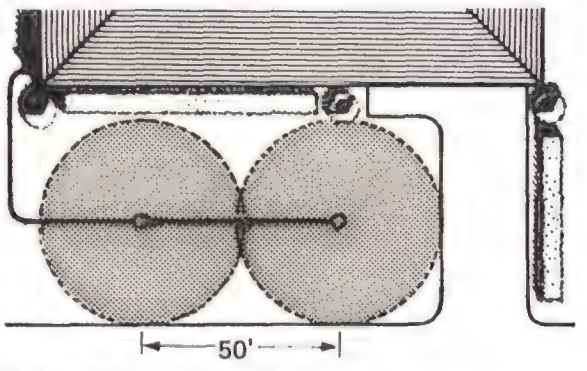

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Gloucestershire, in a Cotswold valley:

> This valley is nameless and leads nowhere. There is one yellow road which dies early, and from there on only a grass-tufted cart-track winds among the rabbit warrens and flowering brambles. There are badger-runs in the brittle grass and in scattered quarries you will find the earths of foxes. Owls sit in the tops of the elm trees, snoring like pensioners in the sun, and water-otters, as smooth as seals, slip silently into the deep, shaded streams.

And of modern-day London:

> So London remains my cage, the door is open, but I cannot leave . . . conscious of a faintly bitter taste in the mouth, it is, I must confess, my own fault. I have just been biting the hand that feeds me, and it tastes of soot.

I have given this space to Lee's own prose, rather than to mine describing his, because his kind of evocative writing is lost in translation to one's own.

A countryman born to farmer parents, Lee came to London—like Dick Whittington, to make his fortune—with no college training, having left school at 15. His writing thus lacks the starchy, formal qualities of much English descriptive prose. His life and travels, not his studies, have provided him with subject matter for his essays. "Autobiography," he writes in this book, "can be the laying to rest of ghosts as well as an ordering of the mind. But for me it is also a celebration of living and an attempt to hoard its sensations." So he spends the first third of this collection revisiting his childhood in a Cotswold valley, the subject which served him so well in his earlier autobiography, *The Edge of Day.*

His style has sharpened somewhat since those nostalgic and often sentimental pages. His travel pieces demonstrate a sense of the turns of history, dependent upon an inevitable review of a country he once went to war in and then returned to much later in peace. Lee was a young man during the Spanish Civil War; he joined the International Brigade and wrote about that experience as well as a travel book on Spain.

Here, in "Ibiza High Fifties," about a Spanish island which did not entirely escape Franco's war, he writes evocatively of a place tourism has invaded: "For the first time in a history of countless invasions Ibiza is being occupied, not by arms, but by money."

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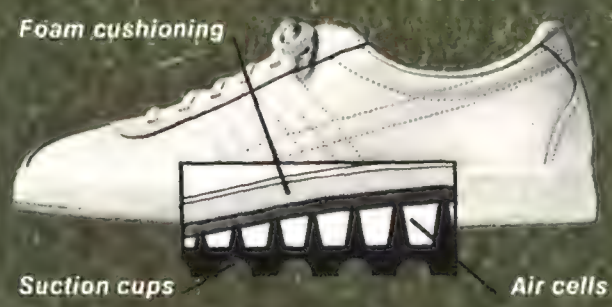

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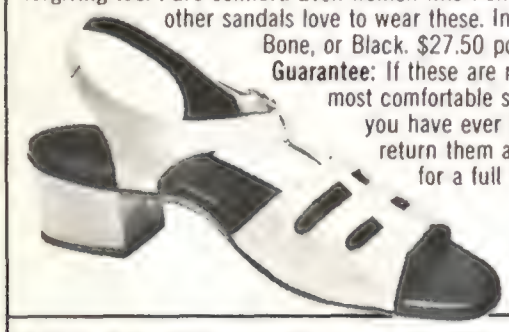

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Lee tells a moving story of his visit to the tragic Welsh town of Aberfan where, in 1966, a school was inundated by a sliding "tip" of waste, "a mountain of moving muck," that smothered many of the town's children—and of the still-shocked survivors, the "spoiled" children that remain, the dreadful, picture-taking sightseers. He is humorous in his report of an invitational visit to Warsaw to attend a celebration of a Polish poet of whom he had never heard. And his experience as a passenger aboard the Concorde on a trial run will interest inhabitants of the New York and Washington areas who may play host to that behemoth: "The device is fantastic; it could telescope the world. It could also diminish our sense of distance and wonder."

Rich prose can cloy; it is to Lee's credit that this does not often happen. If one has an appetite for this kind of writing one should read these pieces slowly, one at a time, each one enjoyed as a separate course, and preferably read aloud to a like-minded friend who loves words, succulent phrases and paragraphs, and will respond to Lee's sense of discovery.

—*Doris Grumbach*
Novelist and critic

Joey
Joseph John Deacon
(Charles Scribner's Sons, $4.95)

The judges for the National Book Awards annually confer honors on the most valuable fiction or most valuable biography, but another category is needed: the least likely book. The award would go to the work that most stubbornly bucked the odds against publishing and came from an author least likely to step forward with the talent or persistence to produce a book. Should "the least likely" award ever be given, one certain nomination is *Joey* by Joseph John Deacon.

Mr. Deacon, 56, was born with cerebral palsy, making him a spastic unable to control his arms, legs or speech. At the age of eight he went to the children's ward in St. Lawrence's Hospital in Surrey, England. He has lived within its walls ever since. Somewhere along the painful and lonely way, he nerved himself against the despair that crushes in on the consciousness of the severely handicapped. My body may be useless, Deacon believed, but my spirit is not.

At a moment when the newspapers

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Classic Rags and Ragtime Songs. Little-known corners of the history of ragtime, including some previously neglected orchestrations from the Red Back Book; unusual later rags by Eubie Blake and others; and two Scott Joplin songs "Pineapple Rag" and "Real Slow Drag" sung by the Morgan State College Choir. Conducted and with annotations by T. J. Anderson. The price for Associates is $6.50

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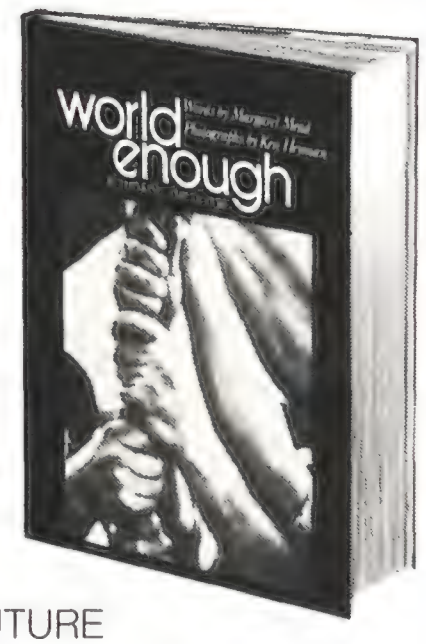

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regularly tell of one health institution or another that has become a dumping ground for the ill or handicapped, any personalized refutation of this view has to be lastingly valuable. Deacon's story will be called inspirational or otherwise maudlinized beyond tears, but it deserves better than that. *Joey* demands that we pay homage to the inner life of man, because there—whether beneath the accidental ugliness of cerebral palsy or the deliberate victimization of the innocent—is the source of all human strength.

Within St. Lawrence's, Deacon has been part of a four-member family that has been united for 25 years. Ernie Roberts, Tom Blackburn and Michael Sangster became collaborators in Deacon's book project. It was a case of four people who joined not to be together but to do something together, which is the basis for any kind of happiness, whether in making a marriage work or getting out a magazine or book. Deacon couldn't talk intelligibly but Roberts could understand him. Roberts couldn't read or write but he could dictate to Sangster. Sangster produced a rough script that was given to Blackburn, who learned typing. With four horses pulling, the load of literacy became light enough to move up the steepest hills of resistance.

The prose coming from this group has little of the bright metaphor or narrative brilliance that marks quality literature. Instead, it moves with a style of simplicity that is found in the best of storytellers. "May the twenty-fourth, nineteen-twenty, Ottington Street, Wolling Road, Camberwell. This is where my life began. After I was born, my mother was in bed, my Grandma Brewer heard a knock on the door and when she opened the door it was my Dad coming home from the army. Grandma Brewer called to her daughter, my mother, to tell her that her husband had come home from the army."

Unbroken by chapters, Deacon's story moves from the events of his childhood to the present. If a theme is present, it is the one of a man at ease with himself, of someone who recognizes his own worth and beauty even if he is the sole beholder. Early in the hospital routine, "I was taken to the psychologist and I was asked the difference between triangle, oval shape, and round ring. They were on paper. I pointed to the figures with my nose and I got them all right. Also she

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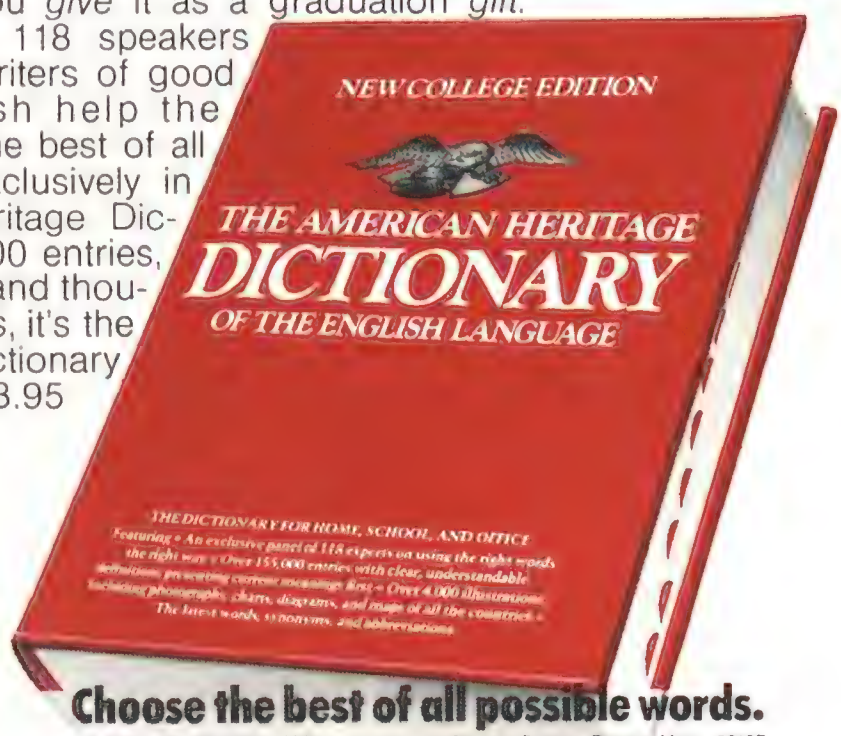

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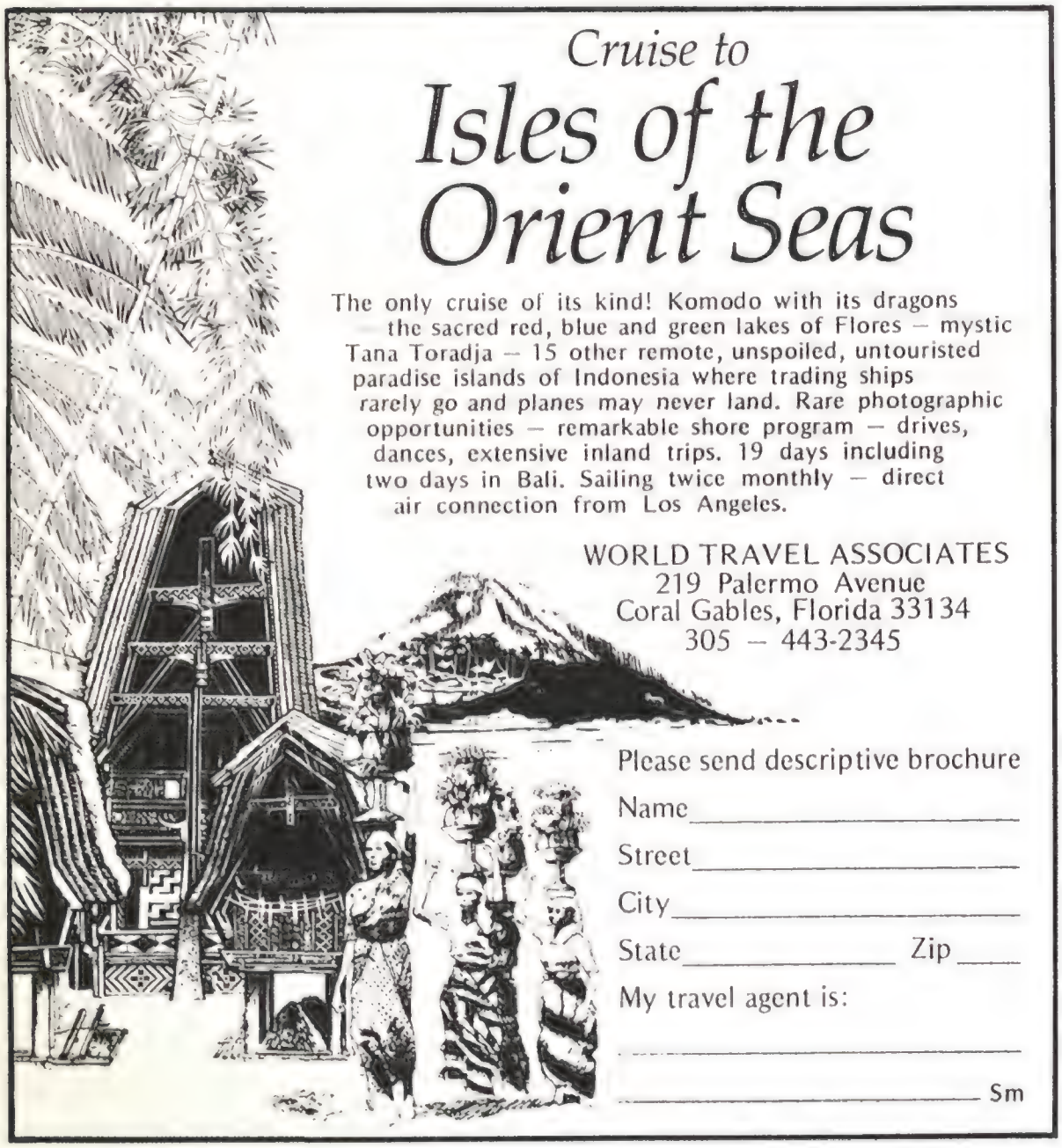
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asked me how many pennies in a shilling. I answered by blinking my eye twelve times. She understood and was very pleased with me. And this is how I made the psychologist understand me. I went back to the ward pleased with myself. One week after I came to [St. Lawrence's] I settled down with the nurses and the other patients. The following week I had my first visit from Dad. My Dad asked Dr. Harris how much I knew, and the doctor told him I was a very intelligent boy."

Near the end of his story, Deacon offers his gratefulness to Ernie Roberts. "I'm just coming up to my fifty-third year. Half of those were silent, half were not, thanks to you. You gave me the chance to talk to the outside world." Deacon means to evoke no sadness, but it must be wondered: what of the countless others like him in the hidden hospitals and homes who have had no chance, only denials? The value of *Joey* may ultimately be that it does for others what was done for him—nudge the handicapped to tell us about themselves, so that in time we will know that their world and the outside world should be indistinguishable. Beauty is within everyone, if only we dare to share it.

—Coleman McCarthy
Writer for the *Washington Post*

The Healing Hand
Man and Wound in the Ancient World
Guido Majno
(Harvard University Press, $25)

Dr. Guido Majno, a pathologist, once sat down to write a monograph on inflammation, in which he has a special interest. Thinking to write a brief historical preface, he began to look into the ways in which the ancients treated inflammation, which is nearly always caused by infection. Infection, in turn, is a central problem of wounds.

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Dr. Majno treats of medicine mainly as it was practiced in Mesopotamia, Egypt, Greece, China, India, Alexandria and Rome. He consulted hundreds of scholars, learned to read cuneiform and hieroglyphics, and studied what appears to be every known source of information. He takes us right into the "offices" of the

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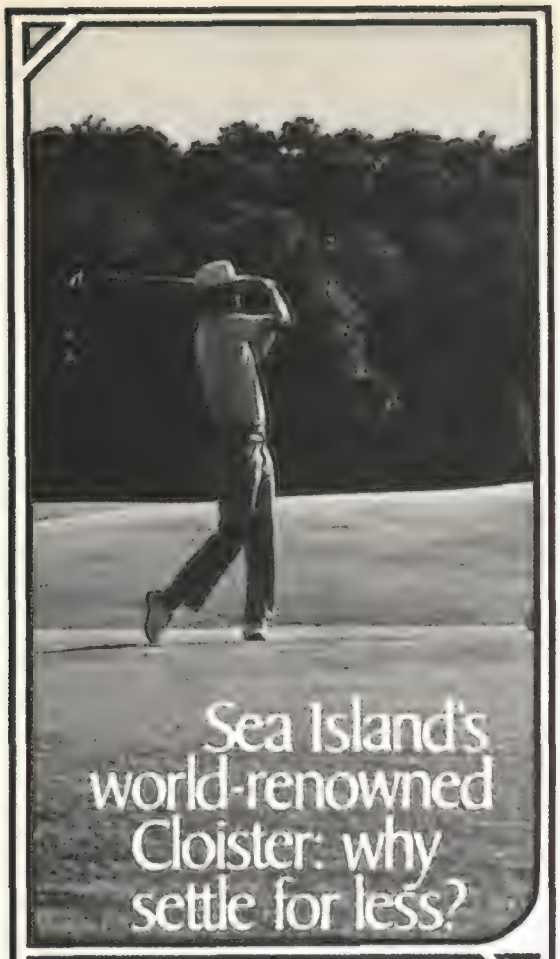

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ancient physicians, gives us real people as patients, describes injuries, the treatment and the instruments and medications used, all to answer one fundamental question: what did the doctor do to the patient and did it help or harm?

More often than one might think, it may have helped. Among substances that ancient physicians applied to wounds were sesame oil, wine, myrrh, frankincense and various forms of copper, all of which Dr. Majno had tested by modern laboratories and all of which revealed antibiotic properties. (Why not use sesame oil on today's babies?) The *vaidya* of India treated snakebite by applying a tourniquet above the wound and sucking out the venom; he rebuilt ruined earlobes and missing noses by methods that differ little from those employed by today's plastic surgeons; he sutured wounds, both by the use of needle and thread and by the use of antheads.

Antheads? Yes. Both the literature of India and the reports of anthropologists in South America say that a surgeon can draw together the edges of a wound and induce an ant to bite the edges. The ant's body is then twisted off, but the head and mandibles remain, holding the flesh together. It took some doing, but Dr. Majno finally tracked down some ants of the right kind—*Eciton burchelli*—and shows us color photographs of one being used to suture a wound on a dead rat.

Needless to say, some of the practices of the ancients were absolute horrors, although the author is at pains to point out how many of them must have seemed reasonable in the light of then current knowledge. Some of the best of the old ideas were lost and had to be rediscovered many centuries later, while some of the worst persisted to the great detriment of mankind. The Greek misconception of treating wounds by starvation, bloodletting and the inducement of "laudable pus" lasted well into the 19th century; heaven only knows how many souls it received prematurely on that account.

Dr. Majno does not write "doctorese" but first-rate English prose, clear, precise and witty. You need no special interest in either ancient history or medicine to find his book a delightful conversation with a scholar who never lets his learning get in the way of his humanity.

—*Jay Nelson Tuck*
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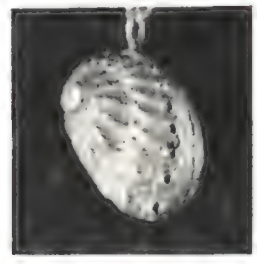

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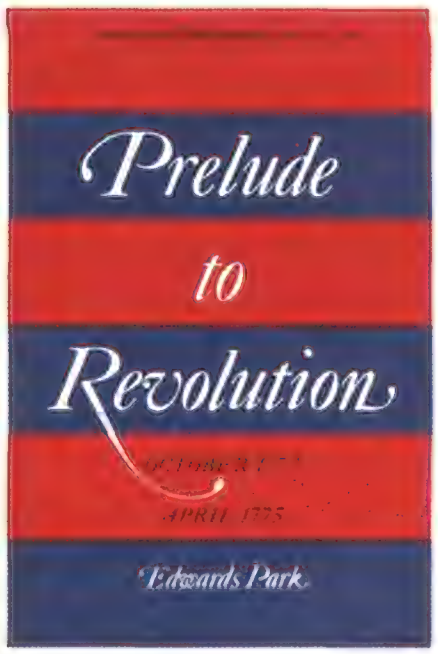

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Additional reading

1876 (p. 36)

The Year of the Century: 1876 by Dee Brown, Charles Scribner's Sons, 1966

Frank Leslie's Illustrated Historical Register of the Centennial Exposition 1876 by Frank Leslie, Paddington Press Ltd., facsimile edition, 1974

The Glorious Enterprise, The Centennial Exhibition of 1876 and H.J. Schwarzmann, Architect-in-chief by John Maass, American Life Foundation, 1973

Centennial, American Life in 1876 by William Peirce Randel, Chilton Book Company, 1969

Water lilies (p. 50)

Flowers of the World by Frances Perry, Hamlyn Publishing Group, Ltd. (London), 1972

Wild Flowers of the World by Barbara Everard and Brian D. Morley, Ebury Press, 1970

Klink (p. 58)

We by Charles A. Lindbergh, Grosset & Dunlap, Inc., 1927

The Spirit of St. Louis by Charles A. Lindbergh, Charles Scribner's Sons, 1953

Baling Wire, Chewing Gum & Guts by Bill Rhode, Kenniket Press, 1970

The Last Hero by Walter S. Ross, Harper & Row, Publishers, 1976

The Barnstormers by Don Dwiggins, Grosset & Dunlap, Inc., 1968

Barnstorming by Martin Caidin, Duell, Sloan and Pearce, 1965

Ozette (p. 68)

Hunters of the Whale, An Adventure

in Northwest Coast Archaeology by Ruth Kirk with Richard D. Daugherty, William Morrow and Company, 1974

The Makah Indians, A Study of an Indian Tribe in Modern American Society by Elizabeth Colson, The University of Minnesota Press and The Manchester University Press, 1953

Indians of the Northwest Coast by Philip Drucker, The Natural History Press, 1955

Bugs and battles (p. 76)

"The Impact of Disease on American History" by Howard N. Simpson, *New England Journal of Medicine,* April 22, 1954

Medicine in the American Colonies by John B. Beck, Horn and Wallace Publishers, Inc., 1966

Fatal Partners—War and Disease by Ralph H. Major, Doubleday, Doran & Company, Inc., 1941

A Short History of Nautical Medicine by Louis H. Roddis, Paul B. Hoeber, Inc., 1941

Tortoises (p. 82)

The Seychelles by Guy Lionnet, David & Charles, Inc., 1972

"Aldabra" by Roger Gaymer, *International Turtle & Tortoise Society Journal,* May-June 1967, reprinted from *Oryx,* Journal of the Fauna Preservation Society, December 1966

"Aldabra" by Malcolm Penny, *Sea Frontiers,* Volume 18, No. 3, May-June 1972

Immigrant artists (p. 92)

Assignment: Rescue by Varian Fry, Four Winds Press, 1968

The Intellectual Migration: Europe and America, 1930-1960 edited by Donald Fleming and Bernard Bailyn, Harvard University Press, 1969

Strangers at the Door by Ann Novotny, Chatham Press, Inc., 1971

The Golden Door: Artist-Immigrants of America, Cynthia Jaffee McCabe, Hirshhorn Museum and Sculpture Garden, 1976 (catalog to accompany exhibition)

Underwater band (p . 102)

"Deep Float: Neuhaus' 'Water Whistle'," Al Brunelle, *Art in America,* September-October 1974

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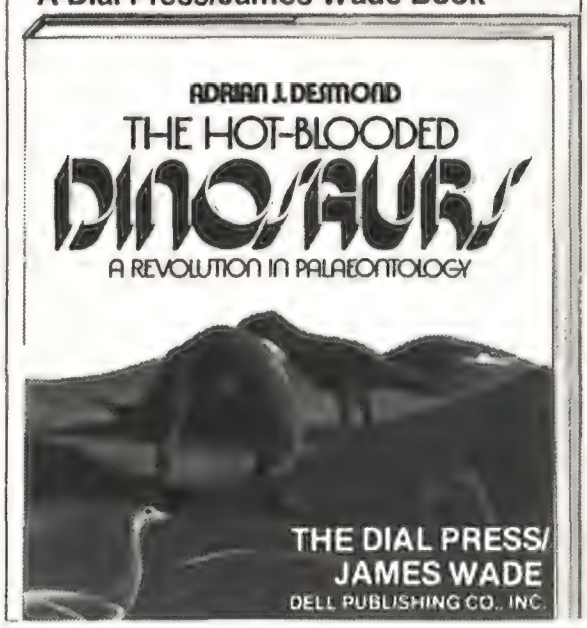

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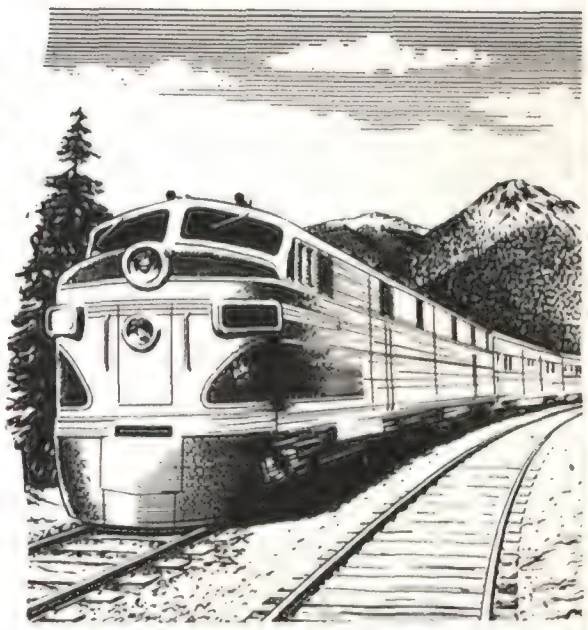

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Smithsonian highlights

Arts and Industries Building
After months of renovation, the building is reopening to the public with "1876: A Centennial Exhibition" (see cover and p. 36). With more than 25,000 objects assembled by the staff of the Museum of History and Technology, the exhibit evokes the atmosphere of America 100 years ago and re-creates many of the features of the U.S. International Exposition of 1876 held in Philadelphia. Exhibitions from the 37 states that existed in 1876, works sent to the Philadelphia Exposition from foreign countries, and spectacular pieces of machinery (see p. 32, February SMITHSONIAN) are part of the "Centennial Exhibition"—opens May 10.

Puppet Theater
"The Grand Centennial Puppet Show," presented by the Nicolo Marionettes, is an adaptation of the popular marionette show presented at the Philadelphia Centennial Exposition in 1876. The newly opened puppet theater in the Arts and Industries Building re-creates a typical Victorian theater in miniature, complete with ornate proscenium, tassels, gilt, fringe and footlights. The elaborate and colorful puppet show features settings and costumes in the style of 100 years ago. "The Grand Centennial Puppet Show" opens to the public May 12 with three shows, 10:30 A.M., 1 and 2:30 P.M., Wednesdays through Sundays. Tickets are available through the box office (202) 381-5395 or the museum shops.

National Collection of Fine Arts
"America as Art" is NCFA's major Bicentennial show. It includes 355 paintings, drawings, prints and sculpture divided

into eight chronologically arranged areas. The works show how American art has been identified with the changing concepts and ideals associated with the United States over the past 200 years. Both major and lesser-known artists are represented, including Frederick Church, George Inness, Louis Lozowick, Charles Sheeler, Georgia O'Keeffe, Grant Wood and John S. Curry—opens April 30.

"Behind the Scenes at NCFA" explains through photographs, graphics and texts the variety and scope of the museum's operations. The emphasis is on the many people behind the scenes who are responsible for the installation, conservation, educational programs and transportation involved in assembling a major show. It uses the Bicentennial exhibition, "America as Art," as an example.

"1876: American Art of the Centennial" is a selection of paintings and sculpture exhibited in the American art section of the Philadelphia Centennial, including the work of Worthington Whittredge, Thomas Eakins, John Rogers and Daniel Huntington. Landscapes, portraits, genre paintings and still lifes depict the simple pleasures of a rural society and the grandeurs of nature—opens May 28.

Each spring NCFA hosts a special day of activities for children. "American Kaleidoscope 76: A Day for All Ages to Make and View Art" is being held May 22 from 10 A.M. to 4 P.M. The program provides opportunities for children to create their own works, take part in games, demonstrations, mural painting and music. The activities are held in the courtyard and throughout the museum. Supplies are provided and the emphasis is on Bicentennial projects.

Bicentennial Highlights in June

Watch for the special Smithsonian Bicentennial Highlights section in the June issue. Information about the summer-long Festival of American Folklife, including a two-page color map, other major exhibits, transportation, parking and dining facilities at the Institution will be included. The section will be devoted to helping Associates and their families enjoy their visit to the Smithsonian museums this summer.

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Cooper-Hewitt Museum Benefit Auction, New York

The third annual auction to benefit the Smithsonian's Cooper-Hewitt Museum of Design in New York will be held the evening of May 25. Public previews of donated objects run from Thursday, May 20, to noon on Tuesday, May 25, in the Museum garden. The Museum is the site of the former Andrew Carnegie property on Fifth Avenue between 90th and 91st Streets, given to the Smithsonian as a permanent home for the Cooper-Hewitt collection of drawings, prints, textiles, wallpaper and decorative objects. Proceeds from the auction will be used to help fund the Museum's public programs. The staff of Sotheby Parke Bernet will serve as auctioneers. For information about auction items or events, call (212) 860-2011.

Renwick Gallery

"Arne Jacobsen, Danish Architect and Designer" demonstrates Jacobsen's influence on his country's international prominence in design during the 20th century. The exhibition includes his major product designs in furniture, textiles, wallpaper and decorative accessories. Photographic panels illustrate his architectural achievements, among them his designs of Copenhagen's first skyscraper—opens May 13.

National Portrait Gallery

"Christian Gullager: Portrait Painter to Federal America" presents the works of a long-neglected Danish-born artist who emigrated to America in the 1780s. The artist painted many wealthy and distinguished Americans, including George Washington. Thirty of Gullager's portraits are shown, spanning his career from 1782 in Denmark to 1808 in America. Gullager was noted for his decorative patriotic works and is sometimes called the "Father of the Eagle." One of his eagle representations is in the exhibition —opens May 12.

Hirshhorn Museum and Sculpture Garden

"The Golden Door: Artist-Immigrants of America, 1876-1976" (see p. 92) is a Bicentennial exhibition assessing the role of the artist-immigrant in American art during the past century and examining the

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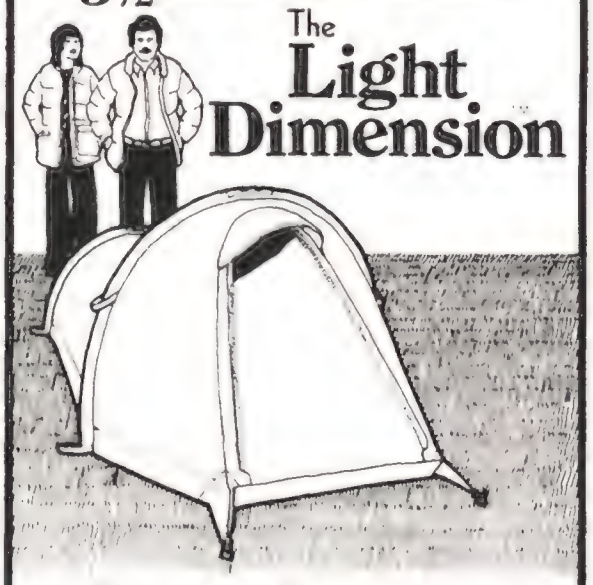

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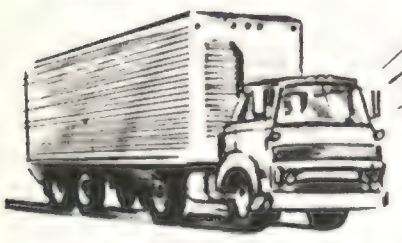

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impact of this country on the foreign-born artist. The show includes 204 works by 67 painters, sculptors, architects and photographers—opens May 20.

A group of 20 special five-by-seven-foot Bicentennial banners has been hung in the Hirshhorn's fountain court. The banners, reflecting Bicentennial themes, were created by such widely known artists as Romare Bearden, Milton Glaser, Allan D'Archangelo and Marisol.

"Café Hirshhorn" serving beverages and box lunches is open daily from 10:30 A.M. to 4 P.M. The café is located in the inner courtyard, around the fountain.

Divisions of Performing Arts and Musical Instruments

Jean Hakes, soprano; James Weaver, harpsichord and forte-piano; and John Hsu, viola de gamba, play Marais, Bach, Handel and Schubert, May 16, 8:30 P.M., Hall of Musical Instruments, Museum of History and Technology.

A free concert on period instruments is part of the opening festivities of "1876: A Centennial Exhibition," May 24, 8:30 P.M., Arts and Industries Building.

The final "Music from Marlboro" concert of the season features an all-string program of Mendelssohn, Ravel and Beethoven, May 1, 5:30 P.M., Baird Auditorium, Museum of Natural History.

For ticket and program information, call (202) 381-5395.

National Zoological Park

The new Mann Memorial facilities for lions and tigers and the renovated elephant house are now open to the public. Also completed are the waterfowl yards and the crane exhibit areas by the birdhouse. "Panda Café," on the rooftop of the Panda House, features German-style food and is open in May on weekends from 10:30 A.M. to 5:30 P.M.

Smithsonian Commons

The Commons is now open daily for Associates and their families, offering a buffet luncheon for $3.25, with a reduced rate for children. Beverages and desserts are optional. Open 10 A.M. to 4 P.M. for beverages, with lunch from 11:15 A.M. to 2:15 P.M.

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Travel Benefits for Smithsonian Associates

With the growth of the Smithsonian Associates, the Institution is striving to meet the needs of its membership by offering a varied travel program. Traditionally, Foreign Study Tours provided culturally oriented, first-class, specialized trips under the guidance of museum curators or experts in respective fields. Then, Domestic Study Tours were added to offer similar opportunities within the United States, thus allowing Associates and their families a chance to combine vacation with a period of study. A year ago, Foreign Charter Tours were introduced; these trips are larger, lower-cost and more generalized in nature. Associates travel benefits are announced exclusively in SMITHSONIAN. Write addresses below for additional information.

Foreign Study Tours

Sicily and Southern Italy—June 6-28: Archaeological sites and museums from Naples south, including complete circuit of Sicily, under the direction of Dr. Richard Howland of the Smithsonian, architectural historian and archaeologist • **Venice Restored***—September 16-24: Dr. David Alan Brown and Anne Radice, both of the National Gallery of Art, explore art and life of Venice • **Morocco and Egypt**—September 26-October 19: Tours of these fascinating countries include a steamer cruise on the Nile • **Adriatic Shores**—October 2-17: From Athens to Venice on the *Argonaut,* via Bari, Ravenna; return to Athens via Dubrovnik, Split and Corfu • Write Miss Bliss Schumann, Foreign Study Tours, SI 123, Smithsonian Institution, Washington, D.C. 20560 or call (202) 381-5520. *Optional pre-departure lectures will be offered.

Foreign Charter Tours

Great Britain*—September 16-30: The National Gallery, Tate, Victoria and Albert; walking tours of literary London and excursions in the countryside; the best of London theater • **Eastern Europe***—September 23-October 7: Hungary and Czechoslovakia; "lifeseeing" tours and museum seminars in Budapest, trips to Lake Balaton and Eger River before traveling on the Danube by hydrofoil to Bratislava; visits to Bohemian towns of Telc and Kutna Hara; five-day study and cultural program in Prague • Low cost of tours includes first-class hotels, most meals, sightseeing, lectures, theater tickets and round-trip air fare from Washington, D.C. Watch for the announcement of the 1977 charter program. Foreign Charter Tours are heavily subscribed, so write early for reservations and additional details concerning a specific trip to Smithsonian Associates Travel Program, A & I 1270B, Smithsonian Institution, Washington, D.C. 20560 or call (202) 381-5635 for information. *Optional pre-departure courses will be offered.

Domestic Study Tours

Alaska Adventure—July 23-August 8: Departing from Seattle, see Alaska by land, sea and air. Highlights include cruise on Glacier Bay and wildlife tour of Mt. McKinley National Park • **Southwest Pueblos**—August 1-8: A tour of pueblos near Albuquerque and Santa Fe, including the Corn Dance at Santo Domingo • **Massachusetts Heritage**—August 15-23: Boston, Salem, Deerfield, Berkshire Music Festival and Sturbridge Village are highlights of this historic tour • **Wind River Mountains**—July 31-August 8: Unique wilderness experience in the lush mountain meadows of Wyoming, with emphasis on subalpine flora • **Williamsburg Family Weekend**—August 13-15: A special program for parents and children (6 through 14) to learn about 18th-century life and experiment with Colonial crafts • **Pacific Northwest**—September 7-18: A tour of Olympic Peninsula and North Cascades to learn about the use of natural forest resources • **Coastal Maine and New Hampshire**—September 25-October 3: Acadia National Park and the White Mountains at the peak of foliage color • **Coming in October:** a boating trip in Utah's Desolation Canyon; an archaeology dig in Illinois; and a tour of the California wine country • **Washington "Anytime" Weekend**—Choose any weekend to visit the nation's capital and enjoy a special tour of the original Smithsonian building, two nights at the elegant Loew's L'Enfant Plaza Hotel, close by, and a chance to see other sights in Washington by Tourmobile (reservations required ten days prior to weekend) • Write Associates Travel Program, A & I 1270B, Smithsonian Institution, Washington, D.C. 20560 for reservations or call (202) 381-5635.

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Traveling Exhibition Service

For information on bringing an exhibit to your area, write: SITES, Smithsonian Institution, Washington, D.C. 20560.

- Arcadia, California—"The Dye Is Now Cast" documents the events of the two years prior to the Revolution (Hinshaw's Department Store, May 8-June 6).
- Burlington, Massachusetts—"And the Band Played On," photographic exhibition of all types of bands (Burlington Mall, May 15-June 13).
- Charleston, West Virginia—"American Art in the Making," 80 sketches and watercolors by 25 artists from Benjamin West to John Singer Sargent (Charleston Gallery of Sunrise, May 16-June 13).
- Lincroft, New Jersey—"American Prints from Wood," woodcuts from the late 18th century to the present (Monmouth Museum, May 8-June 6).
- Minneapolis, Minnesota—"The Dream of America: Swedish Emigration to the United States" examines conditions of mid-19th century Sweden, the journey and adaptation to America (American Swedish Institute, May 22-June 20).
- Pensacola, Florida—"New Glory, Part I," replicas of Revolutionary flags (Historic Pensacola Preservation, May 1-30).
- Philadelphia, Pennsylvania—"Blacks in the Western Movement" documents the participation of blacks in settling the West (Bryant School, May 1-30).

Summer Museum Hours

Smithsonian museum buildings on the Mall are open daily 10 A.M. to 9 P.M. (Air and Space opens July 4); others daily 10 A.M. to 5:30 P.M. Hours for the Zoo are 9 A.M. to 6:30 P.M. daily; the Anacostia Neighborhood Museum 10 A.M. to 6 P.M. weekdays and 1 P.M. to 6 P.M. weekends.

Bicentennial Information

Members planning on coming to Washington for the Bicentennial should write Associates Reception Center, Smithsonian Institution, Washington, D.C. 20560 for valuable information. Associates planning more extensive travel can also obtain information about museums and sites in the original 13 states by writing the same address marked "Attention: Museum Reference Service."

Parking for Visitors

The Air and Space garage, 7th St. and Independence Avenue, S.W., is now open to the public, 9:30 A.M. to 10 P.M. daily.

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- Of these 175 stocks, 50 are *also* ranked 1 (Highest) or 2 (Above Average) for Safety;
- Of these 50 stocks, 28 are *also* ranked Average or better (3, 2 or 1) for Probable Market Performance in the next 12 months relative to the other 1600 stocks. The others are ranked 4 or 5 and would best be avoided for the time being.

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The regular weekly Value Line Survey also includes the *Selection & Opinion* section—giving Value Line's forecast of Business and the Stock Market, and the investment strategy Value Line recommends currently, with a detailed analysis of an Especially Recommended Stock plus a wealth of investment background including the Value Line Stock Averages.

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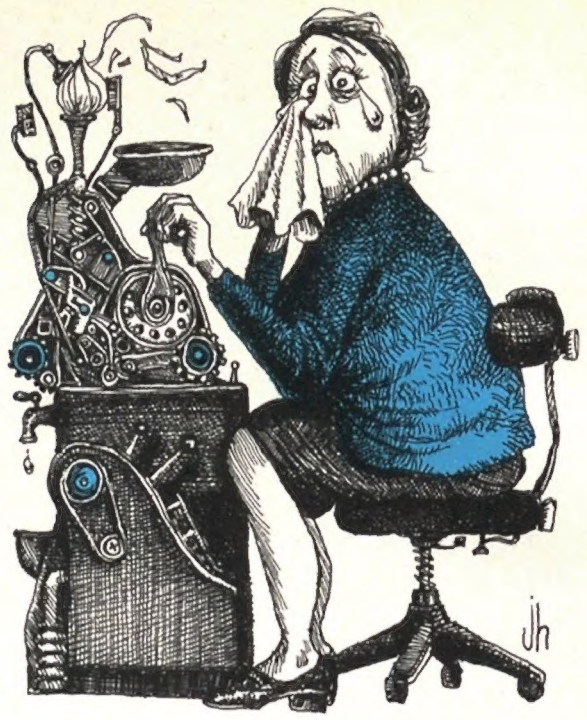
By Patrick Ryan

No tears about tears from a dry-eyed chauvinist



Sometimes our human comedy provides occasions of reality so bizarre as to deny any hope of further embellishment by comic invention. As lately exemplified in a newspaper report that a British high court judge, hearing a case alleging breach of contract over onion-peeling machines, transported the full panoply of his court to a Welsh onion-pickling factory, housed in a former tin-plating works built in 1880. There they solemnly watched weeping Welsh women peeling 120 odoriferous bulbs a minute, all the while, in emulation of the Walrus, holding their pocket-handkerchiefs before their streaming eyes. (It is said that keeping a burnt kitchen match or a slice of bread in the teeth inhibits weeping, but the factory may not have heard of this.)

Those weeping women of Wales may take some comfort from the opinion of Charles Dickens that their lachrymose labors may, after all, be salubriously beneficial to females. As evidenced through Mr. Bumble, the workhouse master in *Oliver Twist,* whose heart was waterproof and thus enabled him to bid his weeping wife to cry her hardest because it was conducive to good health. "It opens the lungs, washes the countenance, exercises the eyes, and softens the temper," he said. "So cry away."

Although, biologically, tears are considered to be only the slightly antiseptic saline solution exuded by the lachrymal glands to keep the conjunctiva moist, they have many other and subtler identities in the literary dimension. Winston Churchill offered them to Britons in 1940 as a major ingredient in his wartime hors d'oeuvre suitably accompanied by blood, toil and sweat. Omar Khayyam didn't consider them much use as a graffiti detergent; he pronounced that once the moving finger writes and having writ, not all thy tears can wash out a word of it.

Alfred, Lord Tennyson, despite the wisdom of his beard and the nobility of his brow, testified to their eternal mystery in openly admitting that tears, idle tears, he knew not what they meant. And Sam Weller dismissed the possibility of their application for any practical purposes on the grounds that, in his experience, tears never yet wound up a clock or worked a steam engine.

From which judgment it is apparent that Sam spent more time polishing his aphorisms than in coping with weeping women, since rueful tribute has been paid by other observers to the motive power of feminine tears in compelling obstinate males to obedient action. The God-given ability to turn on the waterworks when all other arguments have failed to gain victory, has long been regarded as the female's most potent armament in the war between the sexes.

But in these triumphant times of women's liberation, when feminine superiority is acclaimed and masculine chivalry may be outdated, the question arises whether any self-respecting female of the species can now stoop to exploiting the weakness of tears as her ultimate strength. Dry eyes and dainty stiff upper lips soon will become *de rigueur.*

Some reconsideration may also be necessary of Charles Kingsley's unfair division of labor in his long-accepted statement, "For men must work and women must weep." On that unbalanced basis, I've spent the thick end of my allotted span working my two typing fingers to keep the female members of my household in states to which they like to become accustomed. For me, obviously a male chauvinist fogey, come soon that bright new future when the allocation is reversed, their ladyships take over the treadmill and all a man has to do is lie around the house, sniffling mournfully from time to time.

And pondering, I must conclude that tears provide the major punctuation in our life narrative here below. The moment you're born, somebody smartly belts you across the bottom to make you cry. It being adjudged by folklore a good omen if a baby cries at baptism, your transporting godparent is likely to give you a sly pinch on the way to the font to set you into lucky lamentation.

At your wedding, superstition hopes your bride will break into copious tears, because such boohoo indicates that you've not been landed with a witch since these broomstick aviatrixes, of course, can weep but three tears and those only from the left eye. And when you eventually depart from this vale of tears, having wasted much of your time in crying over spilt milk or for the moon, your loved ones, you hope, will launch you into the hereafter on a family floodtide of heartbroken lacrimation, activated, if need be, by machine-peeled Welsh pickling onions concealed in their handkerchiefs.

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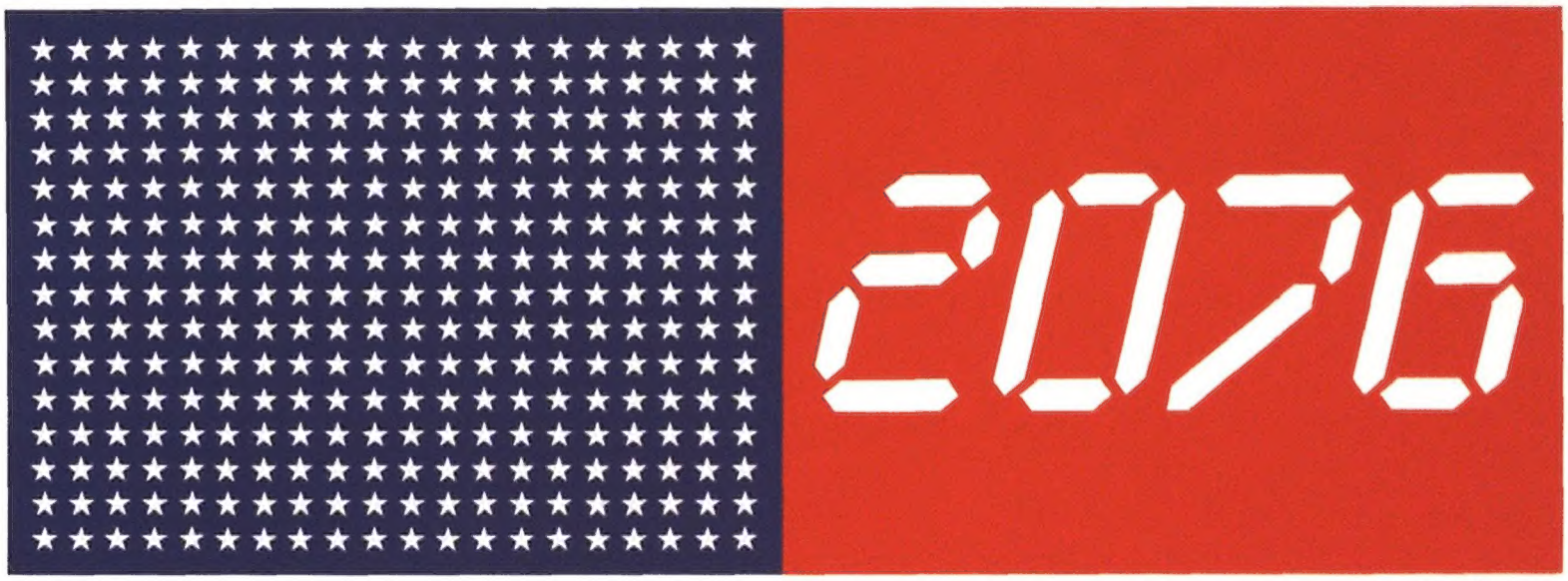

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What changes would you like to see in government? (City? State? Federal?)

What do you envision as the best way to solve our energy problems?

What about the future of business? (More regulation by government? Less?)

What measures would you take to protect the environment?

Or, if those topics don't appeal to you, pick one that does.

How should our physical world be altered? Do you recommend that we live underground? In plastic bubbles?

Will family life change? Will we choose a spouse by computer? Will divorce become illegal?

What should our schools be like? Should machines replace teachers?

What will make us laugh? What will be funny that isn't funny now?

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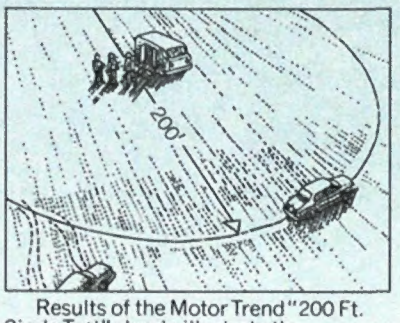
And, to be a bit blunt, BMW gives you a superior suspension system. Instead of the "solid-rear-axle" systems found in all domestic—and many foreign—sedans, the BMW suspension is fully independent on all four wheels.



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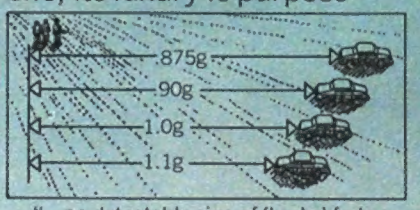

"...no detectable sign of (brake) fade. The more and harder they're used, the stronger they seem to get." The editors of Motor Trend sum up the results of their rigorous multiple-stop brake test.

fully engineered to perform a very significant function: help prevent driver fatigue.

All seats have an orthopedically molded shape. Individual seats are adjustable forward and back—with variable-angle seat back and cushion supports.

All instruments are clearly visible; all controls are readily accessible.

For many serious drivers in all parts of the world, the BMW 530i has redefined the meaning of the word "luxury" to encompass something more than a thin veneer of brocade and chrome.

If you'd care to judge for yourself, we urge you to phone your BMW dealer and arrange to take a thorough test drive.

The ultimate driving machine.

Bavarian Motor Works, Munich, Germany.

For the name of your nearest dealer, or for further information, you may call us anytime, toll-free, at 800-243-6006 (Conn. 1-800-882-6500). Fog lamps, dealer installed option.

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